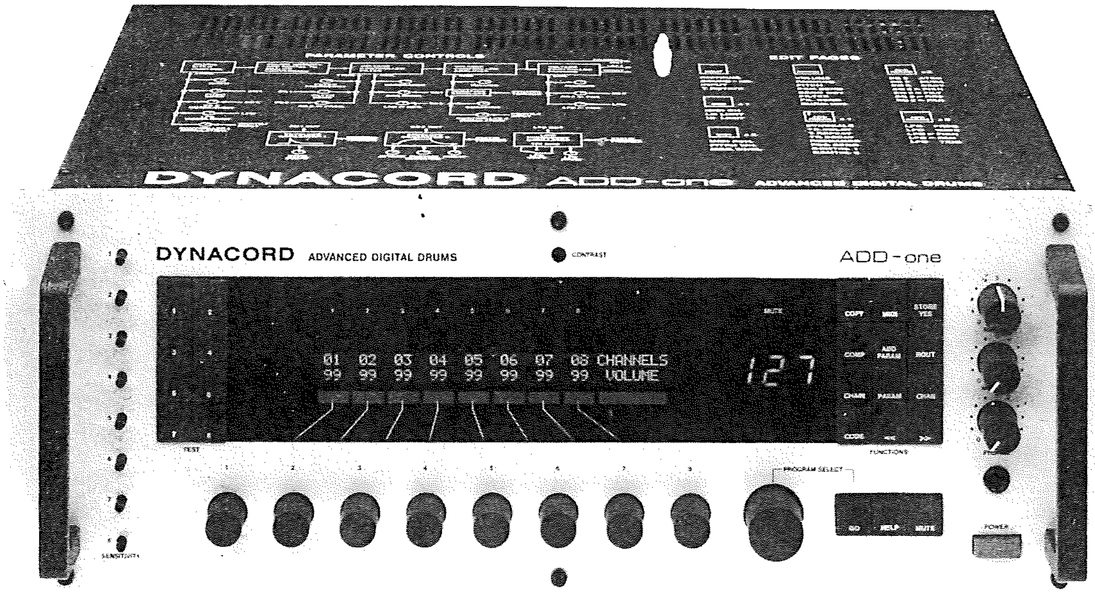
DYNACORD

Operating Manual



ADVANCED DIGITAL DRUMS

ADD-one

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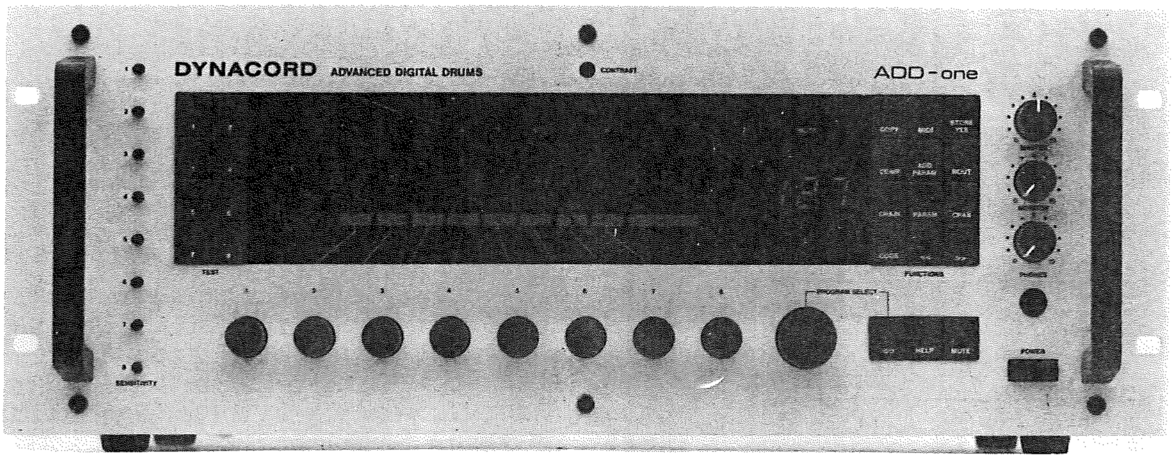
2. External Design

The unit is of 19"" rack design and 4 units high. It can either be set up as a free-standing device or built into a standard 19-inch rack. When fitting the unit into a rack, make sure that the bending moment exerted on the front panel is kept to a minimum. The ADD-one should therefore be supported on the rear of the unit by suitable mountings or installed on rails. Ensure sufficient ventilation.

2.1. The Front of the Unit



The following controls and functions are located on the front of the unit

1 SENS Controls 1 to 8
These controls determine the input sensitivity of the pads or other trigger sources connected to TRIGGER inputs 1 to 8 on the rear of the unit. This matching capability allows the use of a wide variety of pickups and other trigger sources.

2 TEST Buttons 1 to 8
Using these buttons, the individual channels 1 to 8 can be triggered without the necessity to connect pads or similar hardware to the trigger inputs on the rear panel. However, with these buttons, the beat strength is fixed, i.e. no beat dynamics are possible.

3 Control Knobs (Rotary Encoders) 1 - 8
The parameters assigned to these controls, which appear on the display, can be modified by turning clockwise or anticlockwise.

4 Control Knobs (Rotary Encoders) for Program Number
The program number indicated above these controls can be altered from 0 to 127 by turning clockwise or anticlockwise.

5 Trigger LED's
These LED's light up to indicate that the associated channel is being triggered by a signal. This signal can come from outside via the inputs (TRIGGER INPUT 1 - 8), from the TEST buttons, the MIDI interface or trigger generated by internal programming.

6 The Display

The two-line alphanumeric liquid-crystal display (LCD) is capable of displaying 40 letters, digits or characters per line. The contrast can be adjusted by means of the control located above the centre of the display. The integral illumination makes it particularly easy to read the display even in darkness.

7 MUTE Display

This LED flashes to show that channel outputs 1 to 8, the master and monitor output are muted with the signal being retained on the headphone jack. This function is particularly suitable for pre-listening to selected programs "live" without being able to hear the signal via the PA or the monitor path.

8 The Function Key Block

COPY	MIDI	STORE YES
COMP	ADD PARAM	ROUT
CHAIN	PARAM	CHAN
CODE	<<	>>

GO	HELP	MUTE

These soft-touch pushbuttons call and control the individual functions of the unit. The function selected appears together with its parameters on the display. Further details are described in Section 4 (Variable Parameters) and Section 5.2 (Programming Individual Parameters).

9 Volume Controls

Three independent volume controls determine the amplitude of the respective overall output signal: MASTER governs the volume of the rear panel outputs MASTER RIGHT-LEFT MONO, MONITOR controls the volume of the rear panel outputs MONITOR RIGHT-LEFT MONO, PHONES determines the volume in the 6.3mm stereo jack connection below this control for a set of headphones.

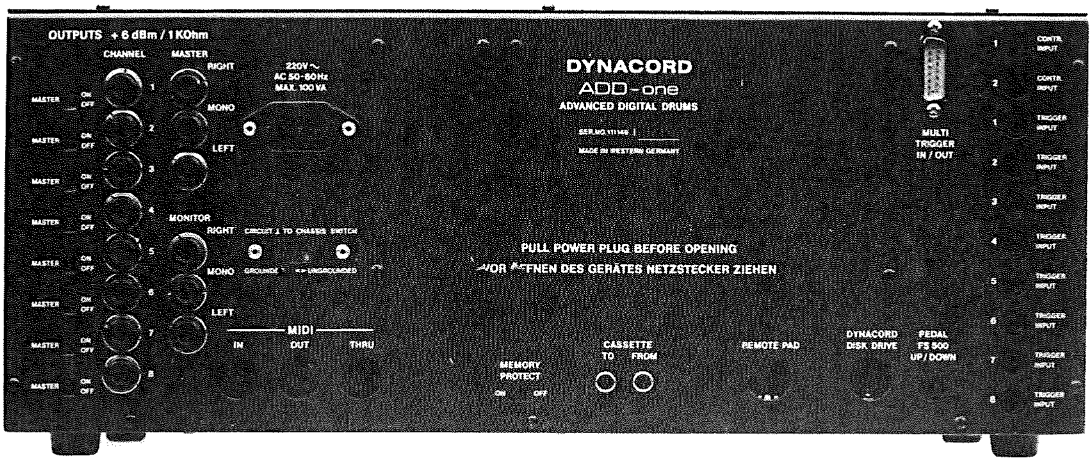
10 Headphone Jack

This 6.3mm stereo jack socket can take a set of stereo headphones. The left-hand channel is fed to the tip of the jack plug, the right-hand channel to the ring and the shaft accommodates the common chassis. Please do not use a mono jack plug (2-pole) since this may damage one of the headphone output amplifiers as it would be shorted due to the extended shaft of the mono plug.

11 Mains Switch

This switch is used to turn the unit on and off. Before switching on, ensure that the mains voltage selected for the unit (see rear panel) agrees with your particular mains supply.

2.2 Rear of Unit



The rear of the unit accommodates the following connection jacks and switches:

12 Output Jacks CHANNEL 1 to 8

These 6.3mm mono jack sockets enable separate output of the individual channels with their selected instruments and parameters. The only parameter which has no effect on these signals is the PAN (stereo panorama) parameter. The signal is unbalanced; the maximum output voltage is 1.55 volts (corresponding to + 6dBm) at an output impedance of 1 kohm. Thus the connection of practically all line inputs of subsequent mixers, tapes machines or signal processors, etc. is no problem.

13 The MASTER ON-OFF Switch

The position of this switch determines whether the respective channel signal is present in the MASTER signal or not. It is therefore possible to produce a different "mix" in MONITOR than in MASTER. In addition, individual channels can be processed separately on the mixer.

14 The MASTER RIGHT-MONO-LEFT Output Jacks

These 6.3mm mono jack sockets enable output of the right and left-hand MASTER signals (set by parameter PAN) and a mono signal. The signal is unbalanced; the maximum output voltage is 1.55 volts (corresponding to +6 dBm) at an output impedance of 1 kohm. The signal volume is adjusted by the MASTER control on the front panel.

15 The MONITOR RIGHT-MONO-LEFT Output Jacks

These 6.3mm mono jack sockets enable output of the right and left-hand MONITOR signals (set by parameter PAN) and a mono signal. The signal is unbalanced; the maximum output voltage is 1.55 volts (corresponding to +6 dBm) at an output impedance of 1 kohm. The signal volume is adjusted by the MONITOR control on the front panel.

16 The MIDI Connections IN-OUT-THRU

MIDI units such as master keyboards, sequencer, etc. can be connected to these 5-pole DIN jacks. The jacks are wired to international MIDI standards. For further details, refer to Section 3.3 (MIDI Connection).

17 The Mains Voltage Selector

The unit will operate on mains voltages of 110V and 220V. The mains voltage selector switch is located inside the unit (consult your DYNACORD service department).

18 The CIRCUIT _ _ TO CHASSIS Switch

This switch is used to separate the circuit chassis from the housing chassis ("UNGROUNDED" position). Installation in 19" racks on metal rails often produces mysterious ground loops (via the conductive front panel connections and AF cable) which can easily be prevented using this switch without having to open the unit. If the unit is not installed in a rack or installed in an insulated rack, the switch should be set to the "grounded" position as otherwise hum or other noises will not be ruled out.

19 The MEMORY PROTECT Switch

This switch protects the contents of the internal memory from inadvertent reprogramming and deletion. In the ON position, it is only possible to read the memory but not write in or delete data. Although it is possible to call and modify the stored sounds, these modifications cannot be stored. Write access to the memory is only given when the switch is in the OFF position. CAUTION! Data which have been deleted or overwritten cannot be retrieved.

20 The Jack Pair CASSETTE TO-FROM

An external cassette recorder can be connected to these jacks for data recording and play-back. The TO jack must be connected to the record input and the FROM jack to the play-back output of the cassette recorder. The cassette interface is called via the program (see Section 5.2.7 - COPY). Only data and control signals will be copied and not sound signals. Sounds can be recorded on tape via the output jacks.

21 Connection Jack REMOTE PAD

This jack is for connecting the optional remote pad which enables program switching by means of a stick or similar, e.g. by the drummer. For further details, refer to Section 7 (Extensions and Accessories).

22 Connection Jack DYNACORD DISK DRIVE

This jack is for connecting the optional 3.5" disk drive which is used for data recording and play-back.

23 Connection Jack PEDAL FS500 UP/DOWN

This jack is used for connecting the optional foot pedal FS500 which enables program numbers to be incremented or decremented. For further details, refer to Section 7 (Extensions and Accessories).

24 Connection MULTI TRIGGER IN/OUT

This multiple jack (15 pole CANNON) can be used to connect a sequencer such as the DYNACORD BIG BRAIN or similar device for triggering purposes without having to connect individual lines for the trigger inputs.

25 CONTROL Input 1 and 2

Pitch modulation can be adjusted via the 6.3mm jack socket (CONTR. INPUT 1). The possible influencing effect and direction of pitch change is program controlled. The duration modulation can be adjusted via the 6.3mm jack socket (CONTR. INPUT 2). The possible influencing effect is program controlled.

A foot pedal or DC voltage can be connected to both inputs. Technical specifications are contained in Section 8 (ANNEX).

26 TRIGGER Input 1 to 8

These 6.3mm mono jack sockets are used to connect pads, trigger microphones or similar. Pulses at these inputs trigger the program assigned instruments. When the instruments are triggered, the associated trigger LED's light up on the front panel. The trigger inputs work dynamically with the beat, i.e. the instruments vary with beat intensity depending on type and parameter assignment.

27 Mains Socket

The mains cable supplied must be plugged into this socket to connect the unit to the mains supply. The unit is factory set to 220V/50 Hz (except if otherwise specified). The unit must be opened to change the mains voltage setting. Details are contained in Section 7.2 (Changing the Mains Voltage).

3. Connection To Your System

This section describes the basic possibilities of connecting this unit to an existing system or other equipment.

3.1 The Signal Outputs

The ADD-one has a total of 15 signal outputs. These are broken down into 4 main groups:

a) Channel Outputs 1 to 8

There are eight 6.3mm mono jack sockets, each of which can be used to output an instrument independently of the others and the selected stereo panorama. These sockets can be used, for example, to connect mixer inputs for mixing the individual channels separately or for coupling in an 8-track tape machine for recording the drum tracks individually.

MASTER Outputs RIGHT - MONO - LEFT

Three 6.3mm mono jack sockets are available for outputting the MASTER signal either in stereo (RIGHT-LEFT) or as a single-channel signal (MONO). The stereo panorama is determined by the programming of parameter PAN whereas the volume is totally dependent on the programming of the VOLUME parameter and the position of the MASTER volume control. The MASTER ON-OFF slide switches adjacent to the CHANNEL sockets can be used to mask individual channels (instruments) out of the MASTER signal. A PA mixer, for example, can be connected here necessitating the use of only two (or one) channels or a stereo return in the mixer for total percussion mixing.

c) MONITOR Outputs RIGHT - MONO - LEFT

Three 6.3mm mono jack sockets are available for outputting the MONITOR signal either in stereo (RIGHT-LEFT) or as a single-channel signal (MONO). The stereo panorama is determined by the programming of parameter PAN whereas the volume is totally dependent on the programming of the VOLUME parameter and the position of the MONITOR volume control. A monitor mixer for stage foldback, for example, can be connected here necessitating the use of only two (or one) channels or a stereo return for total percussion mixing.

d) Headphone Output PHONES

One 6.3mm mono jack socket is available on the front panel of the ADD-one for outputting the PHONES signal in stereo. The stereo panorama is determined by the programming of parameter PAN whereas the volume is totally dependent on the programming of the VOLUME parameter and the position of the PHONES volume control. Stereo headphones with any terminal impedance (8 to 2000 ohms) can be connected here to enable new sounds and sequence combinations to be created and modified in silence. The MUTE button on the front panel can be pressed which silences all outputs apart from the headphone output.

3.2 The Control and Trigger Inputs

There are two control inputs, CONTROL INPUT 1 and 2, and eight TRIGGER INPUTS.

a) CONTROL INPUT 1 and 2

CONTR. INPUT 1 adjusts PITCH modulation, i.e. moving pitch up or down. It is possible to use either controls, foot pedals, etc. or to apply DC voltages.

CONTR. INPUT 2 adjusts DURATION modulation, i.e. the length of the sound. It is possible to use either controls, foot pedals, etc. or to apply DC voltages.

For further details, refer to Section 8.1 (Technical Specifications).

b) TRIGGER INPUT 1 to 8

These eight 6.3mm mono jack sockets are used for connecting trigger pads, microphones or other trigger sources to activate the instruments in the assigned channels. The input sensitivity can be adjusted using the "SENS" trim controls on the front panel. The range of adjustment is extremely wide enabling the use of a magnitude of trigger sources.

3.3 MIDI Connections MIDI IN - OUT - THRU

MIDI is short for "MUSICAL INSTRUMENT DIGITAL INTERFACE" and designates the capability of exchanging information between units run in the MIDI compound. This means that MIDI is a standardised interface with MIDI signals being sent and received at its 5-pole DIN jacks. The ADD-one has three different MIDI jacks designated as follows:

MIDI OUT:	this is where MIDI data are output (sent)
MIDI IN:	this is where MIDI data are received
MIDI THRU:	this is where the received MIDI data are forwarded (looped through).

The MIDI interface is defined in such a way that via one MIDI line, in the form of a 5-pole standard diode cable (stereo copy line), 16 different channels can be transmitted almost simultaneously.

In order to enable the complete and profitable use of all the imaginable variations resulting from the possibility of sending and receiving 16 different pieces of information simultaneously, the MIDI SYSTEM offers three different modes of operation (MIDI MODES): OMNI MODE, POLY MODE and MONO MODE. As far as the transmitted information is concerned, a distinction must be made between channel commands (CHANNEL) and voice commands (VOICES). The channel command determines the number of the transmission channel, the voice command determines the sound (duration, tone colour, etc.).

OMNI MODE: In this mode, the receiving units will ignore all MIDI channel commands, but will execute all other incoming MIDI commands. The sending MIDI units will add the MIDI channel number 1 to all MIDI commands. This is the "lowest" application level as although all data can be transmitted, they cannot be assigned to specific channels.

POLY MODE: In this mode, the receiving MIDI units will only respond to commands which are assigned to the MIDI channel number pre-selected as the receive channel on the receiving unit. Sending units may add different channel numbers to their commands. This application level is somewhat "higher" than in OMNI as specific channels, in which for example something is to change, can be directly addressed without affecting any of the others.

MONO MODE: In this mode, each voice of a receiving MIDI unit can be addressed individually via one MIDI channel. This is the most sophisticated level of application and is at present, however, only possible with a few units.

MIDI wiring is always completely separate from the the audio wiring. The MIDI input lines are electrically isolated from the circuit chassis which means that MIDI will cause no ground loops. The length of the MIDI cable should not exceed 15 m. Use only screened microphone cables with 5-pole DIN plugs. Unlike normal microphone wiring, conductors here must be soldered to pins 4 and 5 with the screening connected to pin 2.

Section 8 in the annex contains further details on programming MIDI for data input and output and data format.

3.4 Cassette Recorder Connections CASSETTE TO/FROM

A cassette recorder or other tape device can be connected to these two CINCH jacks to record program data, i.e. to read out the contents of the internal program memory of the ADD-one and, for example, write earlier program data back into the memory of the ADD-one. In the latter case, however, data currently resident in the memory will be overwritten and lost. The record jack of the recorder must be connected to the "CASSETTE TO" jack on the ADD-one and the play-back jack on the tape device to the "CASSETTE FROM" jack. The recording and play-back level must be appropriately adjusted on the tape device.

3.5 The MULTI TRIGGER IN/OUT Jack

To avoid the use of 8 individual jack cables when triggering the ADD-one from a sequencer for example, this jack provides a simple means of coupling devices with only a single multicore cable. Coupling the DYNACORD "BIG BRAIN" with the ADD-one presents no problem; as far as the connection of other sequencers is concerned, refer to the wiring assignment of the 15-pole Cannon jack in Section 8 - ANNEX.

4. Variable Parameters and their Interaction

4.1 Definitions and Overview

The following parameters for the instruments can be modified:

a) PARAMeter Page
(Function key PARAM pressed once):

- VOLUME	Volume of channel (instrument)
- PANNING	Stereo base
- PITCH	Pitch of the instrument
- PITCH BEND	Variable pitch change (dynamic)
- BEND DECAY	Decay of the pitch bend
- FILTER FREQUENCY	Level of the filter cut-off frequency
- FILTER BEND	Variable filter frequency (dynamic)
- DURATION	Duration of sound

b) ADD PARAMeter Page
(Function key ADD PARAM pressed once):

- DYNAMIC SCALING	Dynamic characteristic of the beat strength
- TRIGGER DELAY	Trigger delay
- TRIGGER REPEAT	Trigger repeat
- TRIGGER DECAY	Decay of repeats
- FILTER RESONANCE	Filter resonance
- RESONANCE BEND	Variable filter resonance (dynamic)
- CONTROL 1	Effect of Control 1 on pitch
- CONTROL 2	Effect of Control 2 on duration

(Function key ADD PARAM pressed twice):

- EG 2 ATTACK	Rise of envelope generator 2
- EG 2 DURATION	Dwell time of envelope generator 2
- EG 2 DECAY	Decay of envelope generator 2
- EG 2 -- PITCH	Envelope generator 2 to pitch
- EG 2 -- FILTER FREQUENCY	Envelope generator 2 to filter frequency
- EG 2 -- FILTER RESONANCE	Envelope generator 2 to filter resonance
- EG 2 -- PANNING	Envelope generator 2 to stereo base

(Function key ADD PARAM pressed three times):

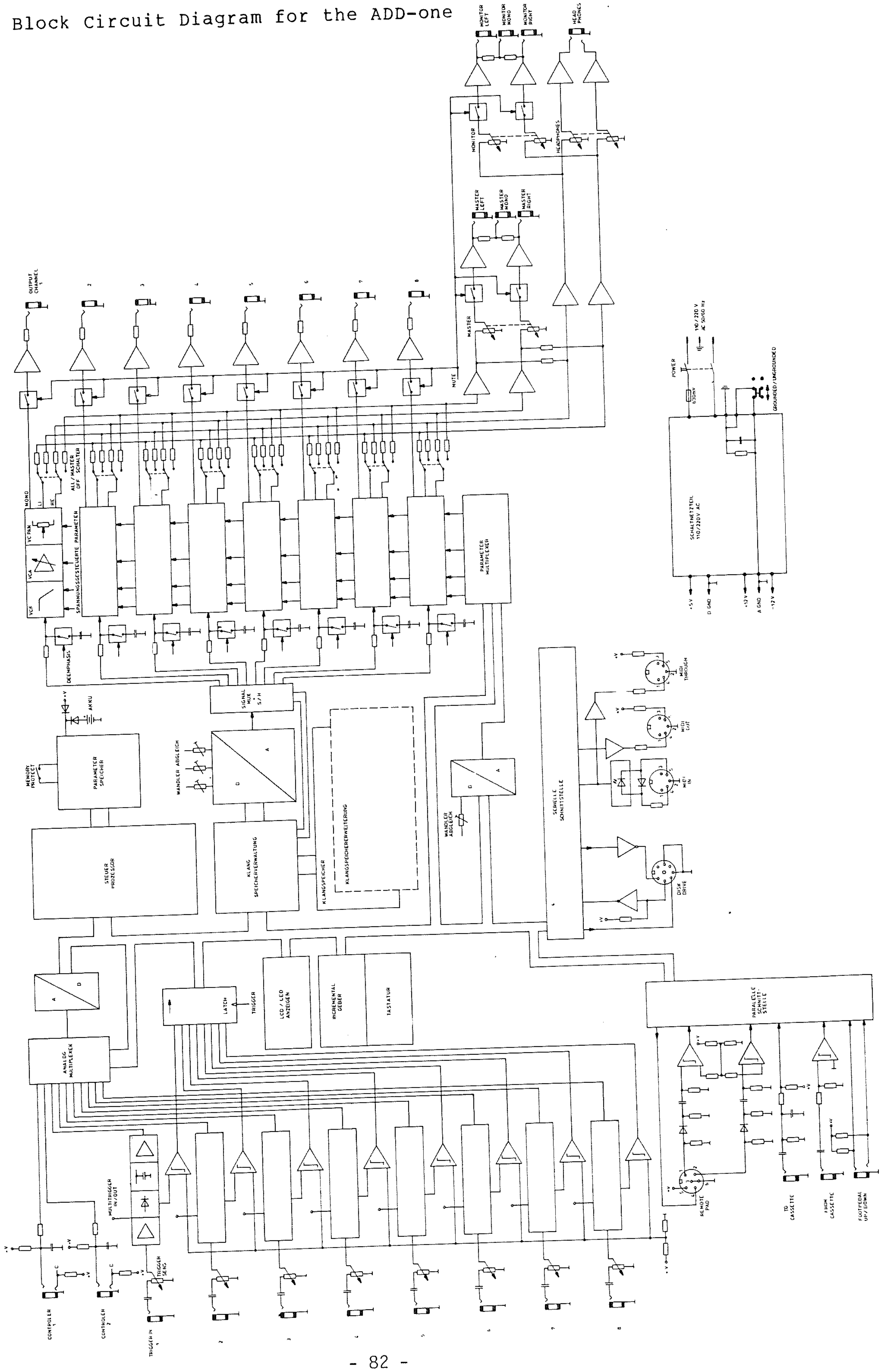
- LFO FREQUENCY	LFO frequency
- LFO WAVE	LFO wave form
- LFO -- PITCH	LFO to pitch
- LFO -- PANNING	LFO to stereo base
- LFO TRIGGER	Start of LFO

c) ROUTing Page
(Function key "ROUT" pressed once):

- INSTRUMENT	Name of instrument category
- SOUND NO.	Number of instrument within a category
- INPUT	Assignment of the trigger to channel
- TRIGGER ROTATE	Setting-up of a trigger loop

The next page contains a block circuit diagram which illustrates the effects of individual parameters on the circuit elements and is designed to clarify the interdependences and interaction of individual parameters.

4.2 Block Circuit Diagram for the ADD-one



5 Altering Parameters in ADD-one

When working through this section, you should have an ADD-one ready for operation at your disposal since trying out the tremendous number of possibilities immediately will give a better understanding of the explanations provided and help you to remember them more easily.

5.1 General

To facilitate editing of the numerous parameter values of the ADD-one, there are two basic display options:

A. An individual parameter, e.g. VOLUME, can be set in all 8 channels using the rotary encoders (3). We will call this the "horizontal mode". In this mode, for example, the display looks like this:

```
01  02  03  04  05  06  07  08   CHANNELS
99  60  50  99  90  99  40  99    VOLUME
```

B. Eight different parameters can be set in a single output channel using the rotary encoders (3). This we will call the "vertical mode". By way of example, the display here would look like this:

```
VOL PAN PIT BEN BDE FIL FBN DUR   PARAM.
99 <10  03  -20  28  00  00  00   CHAN 1
```

After selecting a drumset program with the large rotary control (4), the program number indicator located above the control will start to flash indicating that although the drumset number has been preselected, the individual parameters have not yet been changed. The data will only be fetched from the memory after the "GO" key is pressed and the display will then stop flashing.

If individual parameters in the channel are altered using the small rotary controls (3), these values will also flash on the display indicating that they have been altered from the original memory value. In addition, a dot will also appear at the bottom right of the drumset program display. The alteration is immediately audible at the outputs, regardless of whether CHANNEL, MASTER, MONITOR or PHONES. After pressing the "GO" key, the original memory value will be loaded back and the display will stop flashing again. The display will also stop flashing once the stored value has been found again.

By pressing the "HELP" key, an comment in English will be displayed providing a brief explanation of the functions and parameters associated with each page. Pressing "HELP" a second time will return the original page display.

5.2 Setting the Individual Parameters

5.2.1 Function Block PARAM

After pressing the "PARAM" key (and also after switching on the unit), the user is taken to the first page of the parameter mode. This is the so-called "horizontal mode", i.e. <u>one</u> parameter will be displayed for 8 channels at a time.

PARAM

press ---> EDIT PARAMETER mode page 1.1

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
99  60  50  99  90  99  40  99   VOLUME
```

The VOLUME page has the purpose of setting the output levels of the 8 channels. Maximum volume is 99, while 00 renders the channel inaudible. The volume of the individual channels is adjusted by means of the graphically assigned rotary encoders in steps of two from 00 to 99.

>>

press ---> EDIT PARAMETER mode page 1.2

The display will show for example:

```
01  02   03  04   05   06   07   08   CHANNELS
0  99->  0  <-99<-50<-50   25->25->  PANNING
```

The PANNING page has the purpose of setting the stereo panorama of each of the 8 channels. <-99 corresponds to the "pan pot" setting turned fully anticlockwise, whereas 99-> corresponds to a pan pot setting turned fully clockwise. The setting <-0-> is stereo centre. The adjustment is made by means of the graphically assigned rotary encoders in steps of ten.

>>

press ---> EDIT PARAMETER mode page 1.3

The display will show for example:

```
 01  02  03  04  05  06  07  08  CHANNELS
-99  14  00  15 -01  80  10  00    PITCH
```

The PITCH page has the purpose of setting the pitch of the instruments assigned to the 8 channels. The pitch of each instrument can be raised 1 octave (99) and lowered 3 octaves (-99). Adjustment up or down, however, is only possible until the maximum sampling rate of 50 kHz is reached. The individual channels are adjusted in single steps from -99 to 99 by means of the graphically assigned rotary encoders. The raster definition in the range from +20 to -20 is equal to 1/8 tone per step and in the ranges below -20 and above +20 to 1/4 tone per step.

>> press ---> EDIT PARAMETER mode page 1.4

The display will show for example:

01	02	03	04	05	06	07	08	CHANNEL
00	20	20	72	05	80	-70	00	PCH BEND

This page (PITCH BEND) sets the dynamic pitch bend of each instrument for each channel after it has been triggered. A prerequisite for audibility is a sufficiently long decay duration of the instrument (DURATION page 1.8) and an adequate BEND DECAY rate (see next parameter page 1.5). Negative values bend the instrument pitch from low to high whereas a positive value will bend the pitch from high to low. The display 00 means that the pitch will remain constant. Adjustments are made in double steps from -99 to +99. This parameter is controlled by the intensity of beat.

>> press ---> EDIT PARAMETER mode page 1.5

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
60	50	98	99	00	25	10	00	BEND DCY

This page sets the time (BEND DECAY RATE) in which the pitch of each individual instrument per channel is bent up or bent down after this channel has been triggered. 00 is the fastest time setting and 99 the shortest. A prerequisite for audibility is a sufficiently long decay duration of the instrument (DURATION page 1.8) and a PITCH BEND rate other than zero. Adjustments are made in double steps from 00 to 99.

>> press ---> EDIT PARAMETER mode page 1.6

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
00	50	-20	99	-18	00	-99	00	FILTER

The FILTER parameter is used to adjust the limit frequency of a low-pass filter in the individual channels. 00 is the normal (= approx. signal width) filter setting. Positive values will raise the limit frequency and negative values will lower it, i.e. the proportion of high frequencies becomes less and less. Adjustments are made in single steps from -99 to 99. Positive values are used in particular in conjunction with the "FILTER BEND" parameter. If no rise in the sound pitch is audible when positive values are set, the filter is already adjusted to the maximum bandwidth of the sample.

» press ---> EDIT PARAMETER mode page 1.7

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99 -18  00 -99  00  FIL BEND
```

This is used to select the level of the filter response point which then either rises or falls. Adjustment in double steps from -99 to 99. Negative values correspond to a fall, whereas positive values cause the limit frequency to rise. The time in which this takes place is adjusted through the parameter BEND DECAY (page 1.5).

» press ---> EDIT PARAMETER mode page 1.8

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99 -18  00 -99  00  DURATION
```

This is used to select the decay duration of the sound sample. Adjustment double steps from -99 to 99. 00 is the factory preset, i.e. the value preselected by the manufacturer. Negative values shorten the decay duration whereas positive values will lengthen the sound.

This completes the first parameter page with its 8 parameters. The parameters can be keyed back by pressing " « ".

5.2.2 Function Block ADD PARAM

After pressing the "ADD PARAM" key, the user is taken to the first parameter on parameter mode page 2.

ADD PARAM press ---> EDIT PARAMETER mode page 2.1

The display will show for example:

```
 01  02  03  04  05  06  07  08   CHANNELS
DY1 DY3 DY3 TK1 TK2 TK6 TK8 TK5   DYNSCALE
```

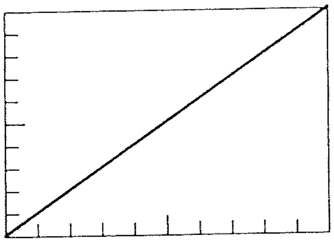
This parameter is used to adjust the response dynamics for each channel for different pad functions. In other words, the beat intensity is assigned to the volume of the sound of the instrument concerned.

DY1 stands for DYNAMIC SCALING 1 and corresponds to a linear beat intensity/volume assignment, i.e. the heavier the beat, the louder the instrument.

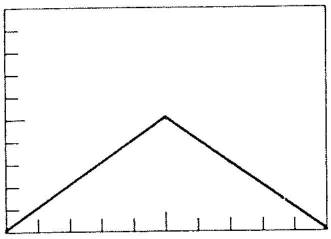
DY2 is initially the same as DY1, i.e. increases from 0 to half amplitude in the first half of the scale. However, the reverse pattern is preset for the second scale half.

DY3 exhibits 0 amplitude for the first half of the scale, but increases in linear fashion to maximum amplitude as of the middle of the scale. For example, this provides a simple means of cross-fading 2 sounds if 2 channels are assigned to one trigger input of which one has the characteristic DY2 and other other DY3. For further details, refer to Section 6 in this manual.

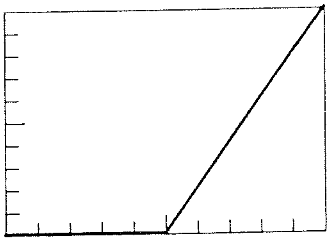
To illustrate the relationships, the shapes of the dynamic curves are presented in graphic form:



DY1



DY2



DY3

TK0 to TK9 stand for dynamic tracking. Via the "CODE" key (refer to section headed "CODE"), it is possible to separately program individual beat intensities/volume assignments with the rotary encoders for all 8 trigger inputs per output channel which can then be assigned to different sounds.

>>

press ---> EDIT PARAMETER mode page 2.2

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
004	127	000	100	050	000	073	127	TR.DELAY

This is where the trigger delay time is set for each channel. Adjustment in single steps from 0 to 127 with each step corresponding to 10 milliseconds. A precondition here is the selection of sufficiently high number of trigger repeats (see next page 1.3). If the display shows 000, no repeat will occur.

>>

press ---> EDIT PARAMETER mode page 2.3

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
INF	33	-28	-98	00	50	98	INF	T.REPEAT

This parameter is used to set the number of trigger repeats for each channel. Adjustment in single steps from 0 to 98. If the control is turned a step further, the message INF will appear which means that the repeats will continue until affected by some influence from outside, e.g. by the selection of a different program. If, for example, 5 is selected, 6 beats will sound (start and 5 repeats). If the display is to agree with the number of beats, a negative display must be selected, i.e. in our example -5. The "original" triggering is then suppressed; the 1st repeat will only become audible after the delay time selected on page 2.2.

>>

press ---> EDIT PARAMETER mode page 2.4

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
-99	00	-28	-98	00	-50	-98	-10	TR.DECAY

This parameter is used to set the volume decay of the individual triggers. The range of adjustment goes from 0 to -99 is double steps with 0 having no effect on the volume and -99 producing the maximum decay.

>> press ---> EDIT PARAMETER mode page 2.5

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
95 OSC  00  10  80  00  00  45  RESNANCE
```

This parameter can be used to set the filter resonance of each channel. Adjustments are made in steps of five with 0 being zero resonance and 95 the maximum resonance step-up. If the control is turned a step further, "OSC" will appear on the display and filter oscillation (sinusoidal continuous tone) will be heard.

>> press ---> EDIT PARAMETER mode page 2.6

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99 -18  00 -99  00  RES BEND
```

This parameter is used to select the level of the filter resonance response point which then either moves up or down. Adjustment in double steps from -99 to 99. Negative values reduce the resonance step-up, whereas positive values increase this step-up, in each case depending on the beat strength. The time in which this takes place is set on the BEND DECAY page (edit parameter page 1.5).

>> press ---> EDIT PARAMETER mode page 2.7

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99 -18  00 -99  00  CNTRL 1
```

This parameter can be used to set the level of pitch modulation by means of an external foot-operated control (e.g. FR 4) via the input CONTROL 1 (on the rear of the unit). This may be either positive or negative (pitch raised or lowered).

Caution: Where the controller modulation is high, the pitch without the pedal plugged in will not correspond to the pitch value displayed.

>>

press ---> EDIT PARAMETER mode page 2.8

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99 -18  00 -99  00  CNTRL 2
```

This parameter can be used to adjust the level of duration modulation by means of an external foot-operated control (e.g. FR 4) via the input CONTROL 2 (on the rear of the unit). This may be either positive or negative (longer or shorter than the "original").

Caution: Where the controller modulation is high, the duration without the pedal plugged in will not correspond to the pitch value displayed.

That completes the second parameter page with its 8 parameters. The parameters can be keyed back by pressing "<<" .

ADD
PARAM

press again ---> Edit parameter mode page 3.1
(i.e. now pressed twice in all)

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99  18  00  99  00  EG2 ATCK
```

This parameter determines the rise time of envelope generator 2 (EG 2). It is adjustable per channel in double steps from 00 to 99 with higher numerical values meaning slower rise.

>>

press ---> Edit parameter mode page 3.2

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99  18  00  99  00  EG2 DURA
```

This parameter determines the duration of the 2nd part of envelope generator 2 (EG 2) in which it remains constant after rising. The parameter is adjustable per channel in double steps from 00 to 99 with higher numerical values meaning longer duration.

>>

press ---> EDIT PARAMETER mode page 3.3

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99  18  00  99  00  EG2 DECY
```

This parameter determines the decay of envelope generator 2 (EG 2). This parameter is adjustable per channel in double steps from 00 to 99 with higher numerical values meaning longer decay duration.

>>

press ---> EDIT PARAMETER mode page 3.4

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99 -18  00 -99  00 EG2->PICH
```

The values of this parameter assign envelope generator 2 (EG 2) to the parameter PITCH, i.e. instrument pitch. Here it is possible to adjust both the extent of the effect (numerical value) as well as the direction of pitch change (positive = up/negative = down). This parameter is adjustable per channel in double steps from -99 to +99.

>>

press ---> EDIT PARAMETER mode page 3.5

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99 -18  00 -99  00 EG2->FILT
```

The values of this parameter assign envelope generator 2 (EG 2) to the parameter FILT, i.e. modulation of the filter frequency. Here it is possible to adjust both the extent of the effect (numerical value) as well as the direction of pitch change (positive = up/negative = down). This parameter is adjustable per channel in double steps from -99 to +99.

>>

press ---> EDIT PARAMETER mode page 3.6

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99 -18  00 -99  00  EG2->RES
```

The values of this parameter assign envelope generator 2 (EG 2) to the parameter RES, i.e. modulation of the filter resonance. Here it is possible to adjust both the extent of the effect (numerical value) as well as the direction of pitch change (positive = up/negative = down). This parameter is adjustable per channel in double steps from -99 to +99.

>>

press ---> EDIT PARAMETER mode page 3.7

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99 -18  00 -99  00  EG2->PAN
```

The values of this parameter assign envelope generator 2 (EG 2) to the parameter PAN, i.e. modulation of the stereo panorama. Here it is possible to adjust both the extent of the effect (numerical value) as well as the direction of shift (positive = from the right to the preselected PAN point; negative = from the left to the preselected PAN point). This parameter is adjustable per channel in double steps from -99 to +99.

That completes the third parameter page with its 7 parameters. The parameters can be keyed back by pressing "<< ".

ADD
PARAM

press again ---> Edit parameter mode page 4.1
(i.e. now pressed three times in all)

The display will show for example:

```
01  02  03  04  05  06  07  08  CHANNELS
00  50  98  99  18  00  99  00  LFO FREQ
```

The values of this parameter are used to set the frequency of the low frequency oscillator (LFO). The higher the numerical value, the higher the frequency will be - which more or less covers the range from 0.1 Hz to 10 Hz. The parameter is adjustable per channel in double steps from 00 to 99.

>> press ---> EDIT PARAMETER mode page 4.2

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
TRI	TRI	RND	RND	TRI	TRI	TRI	TRI	LFO WAVE

This parameter determines the wave form of the low frequency oscillator (LFO). Possible settings are: TRI - triangle and RND = RANDOM, which are retained for each new beat.

>> press ---> EDIT PARAMETER mode page 4.3

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
00	-50	98	-9	-18	00	99	00	LFO-> PICH

The values of this parameter are used to assign the low frequency oscillator (LFO) to the parameter PITCH, i.e. instrument pitch. Here it is possible to adjust both the extent of the effect (numerical value) as well as the direction of pitch change (positive = up/negative = down). This parameter is adjustable per channel in double steps from -99 to +99.

>> press ---> EDIT PARAMETER mode page 4.4

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
00	-50	98	-9	-18	00	99	00	LFO-> PAN

The values of this parameter are used to assign the low frequency oscillator (LFO) to the parameter PAN, i.e. modulation of the stereo panorama. Here it is possible to adjust both the extent of the effect (numerical value) as well as the direction of shift (positive = from the right to the preselected PAN point; negative = from the left to the preselected PAN point). This parameter is adjustable per channel in double steps from -99 to +99.

>> press ---> EDIT PARAMETER mode page 4.5

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
OFF	ON	ON	OFF	ON	ON	OFF	OFF	LFO TRIG

This parameter is used to determine which LFO of the individual channels is switched to triggering. If the "ON" position is selected, the LFO will restart with the value filed in the memory as soon as the trigger is given.

That completes the fourth parameter page with its 5 parameters. The parameters can be keyed back by pressing "<< " .

5.2.3 ROUTING Possibilities

ROUT press ---> EDIT ROUTING page 1.1

The display will show for example:

```
 01  02  03  04  05  06  07  08  CHANNELS
BAS SNA CYM HTO LTO PER GEN EFF  INSTRUM.
```

These parameters are used to assign the individual instrument categories to the relevant channels. The following possibilities are given:

GEN = various generators
BAS = various bass drums
CYM = various cymbals
HTO = various small toms

EFF = various effects
SNA = various snare drums
PER = various percussion instruments
LTO = various large toms

» press ---> EDIT ROUTING page 1.2

The display will show for example:

```
BAS SNA CYM HTO LTO PER GEN EFF   SELECT
001 011 005 003 002 002 001 002  SOUND NO.
```

Now for each instrument category it is possible to select the individual sound number, i.e. the respective instrument itself. The possibilities are governed by the memory configuration of the unit (EPROM "EPSC" or RAM memory "ADD RAM").

» press ---> EDIT ROUTING page 1.3

The display will show for example:

```
 01  02  03  04  05  06  07  08  CHANNELS
 1   2   3   4   5   6   7   8    INPUT
```

On this page it is possible to determine which trigger input is to trigger which channel. Possible assignments range from 1 to 8; it is also possible to trigger several channels simultaneously from one trigger.

>> press ---> EDIT ROUTING page 1.4

The display will show for example:

01	02	03	04	05	06	07	08	CHANNELS
OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	T.ROTATE

This allows each channel to be separately fed in or taken out of the trigger rotation loop. This works on the basis that each time a trigger is released, the next channel switched to ON with the same input assignment is activated. Here it is possible, for instance, by striking a pad to allow different (or identical) instruments to decay completely which would otherwise "start" up again each time a trigger was released. For further details and application examples, refer to Section 6.

5.2.4 Function Key CHAN

CHAN press ---> EDIT CHANNEL mode page 1

The display will show for example:

```
VOL PAN PIT BEN BDE FIL FBN DUR   PARAM.
 99  10  03 -20  28  00  00  00   CHAN 1
```

The CHANnel mode is in fact not a separate new mode, but another form of displaying the parameters which, for example, have already been adjusted for page 1 in the parameter mode in Section 5.2.1. Prior to this, a parameter, such as VOL or PAN, was selected for each of the eight channels: "horizontal mode"; now eight parameters or functions are displayed for each individual channel: "vertical mode". On page 1 these are volume (VOL), stereo base (PAN), pitch (PIT), pitch bend (BEN), pitch bend decay (BDE), filter frequency (FIL), filter frequency bend (FBN) and sound duration (DUR). Keys "»" and "«" can be used to key through the channel numbers 1 to 8. If necessary, the rotary controls can be used to modify the parameter values as described in Section 5.2.1.

ADD PARAM press ---> EDIT CHANNEL mode page 2

The display will show for example:

```
CHR DLY REP RDC RES RBN CL1 CL2    PAGE 2
DY1 044  00 -84  00  00  00  00   CHAN 2
```

Page 2 shows the next eight parameters and functions for a channel. These are the dynamic beat characteristic (CHR), trigger delay (DLY), the number of triggered repeats (REP), decay of the repeats (RDC), filter resonance (RES), filter resonance bend (RBN), effect of control 1 on pitch (CL1) and effect of control 2 on duration (CL2). Keys "»" and "«" can be used to step through the channel numbers 1 to 8. If necessary, the rotary controls can be used to modify the additional parameter values as described in Section 5.2.2.

ADD PARAM press ---> EDIT CHANNEL mode page 3

The display will show for example:

```
ATK DUR DCY PCH FIL RES PAN  ENV2-PAGE 3
 80  28  42  00  00  00  00       CHAN 5
```

This page shows the seven function parameters for envelope generator 2 (ENV 2) for one channel at a time. These are: rise time (ATK), dwell time (DUR), decay time (DCY), effect on pitch (PCH), effect on filter frequency (FIL), effect on filter resonance (RES) and effect on the stereo base (PAN). Keys ">> " and "<< " can be used to step through the channel numbers 1 to 8. If necessary, the rotary controls can be used to modify the additional parameter values as described in Section 5.2.2.

ADD PARAM   press --->   EDIT CHANNEL mode   page 4

The display will show for example:

```
FRQ WAV PCH PAN TRG              LFO-PAGE 4
 70 RND  00  00  ON                  CHAN 1
```

This page shows the five function parameters for the low frequency oscillator (LFO) for one channel at a time. These are: frequency (FRQ), wave form (WAV), effect on pitch (PCH), effect on stereo panorama (PAN) and triggering ON/OFF. Keys " >>" and "<< " can be used to step through the channel numbers 1 to 8. If necessary, the rotary controls can be used to modify the additional parameter values as described in Section 5.2.2.

CHAN + ROUT   press --->   EDIT CHANNEL ROUTING mode   page 1

The display will show:

```
NAM NUM TRG ROT   DESCRIPTION   ROUTING
BAS 001  1  OFF  * AMB.BASS   *  CHAN 1
```

This page shows the four routing function parameters for one channel at a time. These are:

NAM	all instrument category names BAS, SNR, etc.
NUM	all instrument sound numbers 001, 002, etc.
TRG	assignment of trigger inputs 1 to 8 to the relevant channel
ROT	trigger rotation loop ON/OFF

DESCRIPTION designates the instrument name. Channel numbers 1 to 8 can be stepped through with keys ">>" and "<< ". If necessary, the assigned rotary control can be used to alter the parameter values as described in Section 5.2.3.

5.2.5 Function Key CHAIN

CHAIN   press ---> EDIT CHAIN mode page 1

The display will show for example:

```
PLAY CHAIN                STEP 008
             005  115       122       002  015
```

The chaining function CHAIN is used to link together program numbers in any order. STEP indicates how many stepping operation have been made. The number appearing immediately below STEP is the program currently running (which also appears on the large LED display). Preceding program codes appear to the left of this, and subsequent ones to the right. The "»" key is used to move one step forwards without having to press the "GO key each time. At the same time a MIDI program change command is output. Actuation of the "«" key will move one step back. Stepping backwards and forwards can also be done by using the large rotary control located below the large, 3-digit display. The optional REMOTE PAD, which can be plugged into the rear of the unit, enables the preselected program numbers to be stepped using a stick, e.g. by the drummer while he is playing. CHAIN must be pressed again to alter the program number sequence:

CHAIN   press again ---> EDIT CHAIN mode page 2
(i.e. now pressed twice in all)

The display will show for example:

```
001 002 003 004 005 006 007 008   CH.STEP
126 001 098 003 105 005 115 122   PROGRAM
```

The rotary controls can be used to alter the program numbers assigned to the step numbers. However, first the MEMORY PROTECT slide switch on the rear of the unit must be set to the OFF position; otherwise the display will show:

```
        CANNOT EDIT CHAIN
       MEMORY PROTECT IS ON
```

This display will automatically disappear again after approx. 5 seconds and return to the previous display.

By pressing the "»" key, the next 8 "chain links" will appear on the display, e.g.:

```
009 010 011 012 013 014 015 016   CH.STEP
002 015 012 004 002 007 008 015   PROGRAM
```

5.2.6 Function Key COMP

COMP press ---> COMP mode

COMP enables a comparison of changes made (values flashing on the display) with the stored settings. Is only effective when changes have actually been made. It can be switched backwards and forwards between settings indefinitely for comparison purposes without deleting anything. If COMP is activated, the dot appearing next to the large 3-digit display will disappear and the original memory value of the modified parameter values will be re-established. If an attempt is now made to alter a further value, the display will show:

```
       YOU ARE IN COMPARE MODE
PRESS "COMPARE" TO EXIT COMPARE MODE
```

In the "COMPARE" mode, therefore, it is not possible to make any alterations via the rotary encoders.

Press the "COMP" key a second time to exit the "COMPARE" mode again.

5.2.7 Function Key COPY

General remark on "COPY": This function key is used to transfer stored data and to enter or output data via MIDI and TAPE. Particularly when transferring data, the user should be sure of what he is doing because after execution, the values previously stored in the memory will have been deleted and overwritten. The ADD-one has two built-in protection features to prevent data being inadvertently deleted and overwritten:

a) The COPY process is started by pressing the "STORE YES" key. However, before data are finally entered into the memory, the following message will appear on the display:

```
            COPY PROGRAM
          ARE  YOU  SURE  ?         "YES"
```

If the user is still not sure, he can abort the running copy program by pressing "COPY" (or "GO") without altering anything, i.e. overwriting and thereby deleting anything.

b) the "MEMORY PROTECT" slide switch located on the rear of the unit which, for the normal play mode, should always be set to the "ON" position. If an attempt is now made to enter data in the memory when this switch is in the "ON" position, the following message will appear on the display:

```
          CANNOT COPY PROGRAMS
MEMORY PROTECT IS ON    RETURN WITH "GO"
```

It is therefore not possible to store data as the internal memory is protected against write access when the switch is in this position. After pressing the "GO" key, the user is taken to page 1 of the PARAMETER mode and can return to page 1 of the COPY mode by pressing "COPY" again.

There are 4 pages for internal COPY functions and 6 pages for external data transfers.

COPY

press ---> COPY mode page 1 (internal COPY function)

The display will show:

```
COPY CURRENT PROGRAM TO:               COPY
--- --- --- --- --- --- --- ---       PAGE 1
```

With this page, it is possible to copy a complete current drumset program to a total of 8 further program codes. The desired program codes from 000 to 127 must be selected using the rotary encoders assigned to the dashes "---" appearing on the display. Once the selection has been made, the "STORE" key must be pressed.

COPY

press ---> COPY mode page 2 (internal COPY function)
(twice in all)

The display will show:

```
COPY CURRENT SOUND ROUTING TO:      COPY
--- --- --- --- --- --- --- ---    PAGE 2
```

With this page, the sound routing, i.e. the sampling designation of the program and the assignment are copied to up to 8 program numbers. The desired program codes from 000 to 127 must be selected using the rotary encoders assigned to the dashes "---" appearing on the display. Once the selection has been made, the "STORE" key must be pressed.

COPY

press ---> COPY mode page 3 (internal COPY function)
(three times in all)

The display will show:

```
COPY CURRENT MIDI SETTING TO:       COPY
--- --- --- --- --- --- --- ---    PAGE 3
```

With this page, the MIDI settings are copied to up to 8 program numbers. The desired program codes from 000 to 127 must be selected using the rotary encoders assigned to the dashes "---" appearing on the display. Once the selection has been made, the "STORE" key must be pressed.

COPY

press ---> COPY mode page 4 (internal COPY function)
(four times in all)

The display will show:

```
COPY ONE CURRENT CHANNEL:           COPY
CH- TO: CH-P--- CH-P--- CH-P---    PAGE 4
```

With this page, any channel (from 1 to 8) is copied with its current parameters to up to 3 further channels (in each case from 1 to 8) in any selectable program numbers (000 to 127). The desired program codes from 000 to 127 must be selected using the rotary encoders assigned to the dashes "---" appearing on the display. Once the selection has been made, the "STORE" key must be pressed.

COPY

press ---> COPY mode page 5 (external COPY function)
(five times in all)

The display will show:

```
COPY ALL PROGRAMS TO MIDI OUT.      COPY
USE MIDI OUT, PRESS "STORE"        PAGE 5
```

The page provides the possibility of reading out all program data in serial form via the MIDI output jack on the rear of the unit. This process takes about 30 seconds. In this COPY program another ADD-one connected via MIDI IN automatically receives all data (program, global and chain data) and stores then provided that MEMORY PROTECT is not activated ("ON"). The only piece of information which is not sent is MIDI page 3 (OMNI ON/OFF, BASIC CHANNEL and program change ON/OFF) as these data affect the MIDI operation of the receiving machine. For further details on MIDI data, refer to the annex.

After pressing "STORE YES" twice, the following message will appear on the display:

```
SENDING ALL PROGRAMS TO MIDI
OUTPUT PORT--     PLEASE WAIT
```

The following will appear after 30 seconds

```
   ALL PROGRAMS HAVE BEEN SENT OUT MIDI
            RETURN WITH "GO"
```

Pressing "GO" will return the user to page 1 of the parameter mode.

Pressing "COPY" again will take the user to page 6 in the COPY mode:

COPY

press ---> COPY mode page 6 (external COPY function)
(six times in all)

The display will show:

```
COPY ALL PROGRAMS TO TAPE.          COPY
USE TAPE OUT JACK, PRESS "STORE".  PAGE 6
```

The possibility provided on this page enables all program data to be stored on tape via the cinch(RCA) jack "CASSETTE OUT" on the rear of the unit.

Important: The use of high-quality cassette or tape units and tape material is imperative to ensure perfect copies from and to cassette as cheap recorders may produce considerable errors when copying due to flutter, drop-outs, etc.

The copy process takes about 3.5 minutes. This entails pressing "STORE YES", starting the recording on the cassette recorder and then pressing "STORE YES" again (i.e. twice in all).
The following message will appear on the display:

```
COPYING PROGRAM --- TO TAPE
                    USE "GO" TO ABORT
```

--- stands for the program numbers 000 to 127 and steps through automatically.

Once the recording is complete after about 3.5 minutes, the following message will appear:

```
TAPE COPY COMPLETED.TO VERIFY TAPE DATA,
PLEASE USE THE TAPE INPUT JACK     "YES"
```

To verify the data recorded on tape, it is possible with this function to compare the data on the tape with the data in the memory. This process is performed as follows:

Rewind tape and connect playback to the cinch(RCA) jack "CASSETTE FROM". Then press key "YES"; the following message will appear:

```
VERIFY ALL DATA FROM TAPE
START PLAYBACK NOW    USE "GO" TO ABORT
```

Start playback and await result of the comparison. Any errors occurring will be displayed.

The process can be aborted by pressing "GO". If this is done, the following message will appear:

```
         DATA TRANSFER ABORTED
            RETURN WITH "GO"
```

Once the data transfer has been aborted, continue with "GO". After pressing "GO", the user will be returned to page 1 of the parameter mode.

By pressing "COPY" again, the user is taken to page 7 in the COPY mode:

COPY	press ---> COPY mode page 7 (external COPY function) (seven times in all)

This following message will appear on the display:

```
VERIFY ALL PROGRAMS FROM TAPE.          COPY
USE TAPE IN JACK, PRESS "STORE".       PAGE 7
```

As already described for page 6, this function can be used to check the data on the tape for agreement with those in the memory. Any errors occurring will be displayed.

COPY

press ---> COPY mode page 8 (external COPY function)
(eight times in all)

This following message will appear on the display:

```
COPY ALL PROGRAMS FROM TAPE.            COPY
USE TAPE IN JACK, PRESS "STORE".       PAGE 8
```

With the function on this "COPY" page, it is possible to load all program data from tape into the ADD-one memory.

Caution! All memory data already resident will be deleted and overwritten.

COPY

press ---> COPY mode page 9 (external COPY function)
(nine times in all)

This following message will appear on the display:

```
COPY ONE PROGRAM FROM TAPE.             COPY
LOAD PROGRAM --- TO PROGRAM ---        PAGE 9
```

With this page it is possible to load one program from tape into the memory of the ADD-one. All other programs remain unaffected. "---" stands for program number 000 to 127. It is possible to load a freely selectable program number into a freely selectable program memory location. The tape must started from the beginning. Only when the selected program number has been read on the tape will the loading process begin.

COPY

press ---> COPY mode page 10 (external COPY function)
(ten times in all)

This following message will appear on the display:

```
COPY CHAIN FROM TAPE.              COPY
USE TAPE IN JACK, PRESS "STORE".  PAGE 10
```

This page is only used to load the chaining information of the individual program numbers from tape, e.g. for the remote pad. Program data are ignored and not affected in the memory of the ADD-one either.

5.2.8 Function Key MIDI

The "horizontal" and "vertical" modes exist for this function key as well. But to begin with, let us concentrate on the first one, i.e. the horizontal mode. MIDI programming can be entered from the modes PARAM, ADD PARAM, CHAIN, ROUT or COPY.

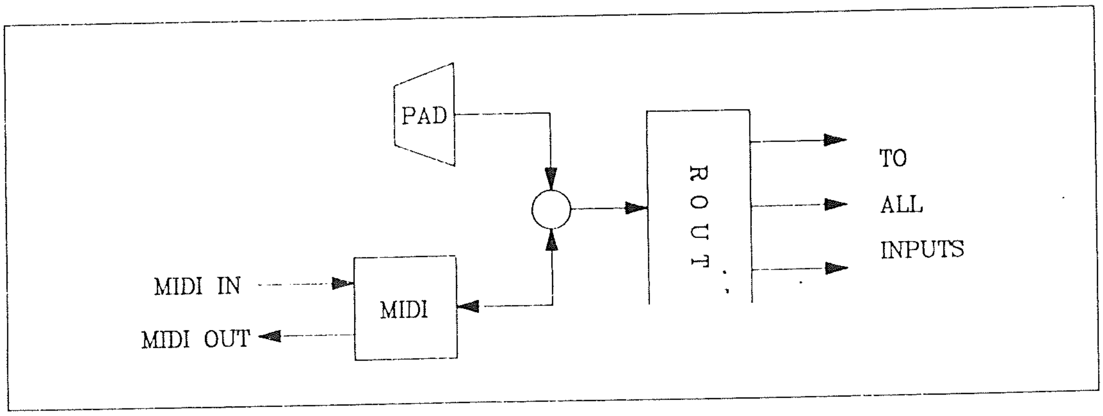
MIDI press ---> EDIT MIDI mode page 1.1

The display will show for example:

01	02	03	04	05	06	07	08	TRIGGERS
01	02	16	10	05	02	04	03	MIDI CH.

On this page, the MIDI channels are assigned to the individual TRIGGER channels, i.e. MIDI channels 1 to 16 (adjustable by means of the associated rotary encoders) can be connected to the any trigger input channel. However, this channel selection does not function for OMNI ON; here selection must be made via the MIDI notes.

Remark: The MIDI settings are connected to the trigger inputs in parallel:



>> press ---> EDIT MIDI mode page 1.2

The display will show for example:

01	02	03	04	05	06	07	08	TRIGGERS
060	059	127	100	020	000	040	090	LO LIMIT

This page prescribes the lowest playable note in the respective trigger channel. Lower notes will not trigger.

>>

press ---> EDIT MIDI mode page 1.3
(pressed twice in all)

The display will show for example:

```
 01  02  03  04  05  06  07  08   TRIGGERS
060 059 127 100 020 000 040 090   HI LIMIT
```

This page prescribes the highest playable note in the respective trigger channel. Higher notes will not trigger.

Values of between 0 and 127 are possible for HI LIMIT and LO LIMIT with "60" corresponding middle "C" on the keyboard.

If MIDI PITCH is set to "OFF", the MIDI NOTE information is not used for tch transposition. If MIDI PITCH is set to "ON", the activated channel will follow the note information between HI LIMIT and LO LIMIT.

The original pitch is played by the key in the middle of the HI/LO range. It is calculated by (HI LIMIT-LO LIMIT)/2, with a non-integer result being rounded down. This note is also sent by the ADD-one as MIDI NOTE information (if HI = LO LIMIT, the note information will be sent).

MIDI

press ---> EDIT MIDI mode page 2.1
(pressed twice in all)

The display will show for example:

```
 01  02  03  04  05  06  07  08   CHANNELS
OFF  ON  ON OFF OFF  ON  ON  ON   MIDI PCH
```

This page is used to activate or deactivate pitch transposition of the individual channels through MIDI.

>>

press ---> EDIT MIDI mode page 2.2

The display will show for example:

```
 01  02  03  04  05  06  07  08   CHANNELS
OFF  ON  ON OFF OFF  ON  ON  ON   PITCH WH
```

This page is used to determine whether it is possible for MIDI information coming from a PITCH WHEEL to effect various parameters in the ADD-one. In the "OFF" position, all MIDI PITCH WHEEL information is ignored. Assignment to following parameters is possible:

VOL = volume
BDE = bend decay
RES = filter resonance
2DE = EG 2 decay time
PAN = stereo base
FIL = filter frequency
2AT = EG 2 rise time
LFO = LFO frequency
PIT = pitch
DUR = sound duration
2DU = EG 2 duration

>>

press ---> EDIT MIDI mode page 2.3
(twice in all)

The display will show for example:

```
 01  02  03  04  05  06  07  08  CHANNELS
OFF  ON  ON OFF OFF  ON  ON  ON  MOD WHEL
```

This page is used to determine whether it is possible for MIDI information coming from a MODULATION WHEEL to effect various parameters in the ADD-one. In the "OFF" position, all MIDI MOD information is ignored. Assignment to the following parameters is possible:

VOL = volume
BDE = bend decay
RES = filter resonance
2DE = EG 2 decay time
PAN = stereo base
FIL = filter frequency
2AT = EG 2 rise time
LFO = LFO frequency
PIT = pitch
DUR = sound duration
2DU = EG 2 duration

MIDI

press ---> EDIT MIDI mode page 3
(three times in all)

The display will show for example:

```
 OMNI  PROGRAM CHANGE  BASIC CHAN  MIDI
  ON         ON            01      PAGE 3
```

On the 3rd MIDI page it is possible to switch the ADD-one with the 1st rotary encoder (from the left) to MIDI modes OMNI or POLY/MONO. When OMNI is "ON", MIDI information is not selected channel by channel. The 8 channels of the ADD-one can then only be selectively addressed via the note information. When OMNI is "OFF", the respective MIDI CHANNEL assignment is effective in the associated channel of the ADD-one and in the BASIC channel. The unit is now operating in the MONO mode, i.e. each channel can be separately addressed from its assigned MIDI channel. A special case would be the POLY mode if all channels were assigned to the same MIDI channel. If the parameter PROGRAM CHANGE is set to ON, the ADD-one will change the program if a MIDI program change command is received. If the user changes a program on the ADD-one, a program change command will be sent. If, on the other hand, the parameter PROGRAM CHANGE is set to OFF, program change commands can neither be received nor sent.

With BASIC CHANNEL, a MIDI channel (1 to 16) can be selected to specifically receive or send MIDI program change commands.

MIDI   press ---> EDIT MIDI mode page 4
(four times in all)

The display will show:

```
STORE CURRENT MIDI SETTINGS          PAGE 4
TO ALL PROGRAM LOCATIONS            "STORE"
```

Once the MIDI settings have been deemed okay, they can on this page be copied to all programs of the ADD-one. After pressing "STORE", the following message will appear on the display:

```
   STORE MIDI SETTINGS TO ALL PROGRAMS
                ARE YOU  SURE  ?        "YES"
```

Press "STORE YES" again:

```
STORING  CURRENT MIDI SETTINGS
    TO ALL PROGRAMS-- PLEASE WAIT
```

After waiting for about 15 seconds:

```
   MIDI SETTINGS STORED TO ALL PROGRAMS
                RETURN WITH  "GO"
```

After pressing "GO", the user will be returned to the PARAMETER mode.

Now let us take a look at the second mode, i.e. the "vertical" mode. MIDI programming is entered from the CHAN mode.

CHAN + MIDI   press ---> EDIT MIDI CHANNEL mode page 1

The display will show for example:

```
CHAN  LOLIMIT HILIMIT             MIDI PAGE 1
 01      000      127                  TRIG 1
```

On this page, the 3 MIDI trigger functions are assigned separately for each trigger input. The relevant trigger channel (1 to 8) of the ADD-one can be selected using the ">>" and "<<" keys. The rotary encoders provide the following possibilities:

CHAN 01 to 16, LOLIMIT 000 to 127, HILIMIT 000 to 127

MIDI

press ---> EDIT MIDI CHANNEL mode page 2
(twice in all)

The display will show for example:

```
PITCH  BENDW  MODW              MIDI PAGE 2
 ON     OFF    OFF                  CHAN 1
```

On this page, the 3 MIDI modulation functions are assigned separately for each channel (1 to 8) of the ADD-one. The appropriate trigger channel (1 to 8) can be selected using the ">>" and "<<" keys. The rotary encoders provide the following possibilities:

a) PITCH ON/OFF - pitch transposition between LO and HI LIMIT.
In the case of OFF, the function is deactivated.

b) BEND WHEEL - can affect various parameters in the ADD-one.
These are:
VOL = volume
PAN = stereo base
PIT = pitch
BDE = bend decay
FIL = filter frequency
DUR = sound duration
RES = filter resonance
2AT = EG 2 rise time
2DU = EG 2 duration
2DE = EG 2 decay time
LFO = LFO frequency

c) MODULATION WHEEL - can affect several parameters in the ADD-one. For individual parameters, refer to b) above.

EDIT MIDI CHANNEL PAGE 3 and PAGE 4 are identical to EDIT MIDI pages 3 and 4 already mentioned under "horizontal programming".

Note: On some MIDI keyboards (e.g. Yamaha DX7), the 128 dynamic stages defined in the MIDI standard are not used but instead, for example, only 109 (6DH) dynamic stages are output. This means that it is not possible to reach the maximum trigger level in the ADD-one with all equipment. In this case, the user must program appropriately corrected tracking outputs. This is not a fault of the ADD-one but rather a peculiarity on the part of other manufacturers in the way they use the possibilities offered by MIDI. Refer also to next section (5.2.9).

5.2.9 Function Key CODE

CODE press ---> CODE page 1

The display will show for example:

```
::::::::::::::::::::::::           TRACKING
010 051 058 128 160 192 224 255     OUTPUT 1
```

This page is used to set the dynamics for one output channel at a time. The numerical values can be varied between 0 and 255. The appropriate output channels can be selected by pressing "»" and "«". On the display to the left of the word TRACKING is a "PEAK meter" which provides a visual indication of the beat strength for incoming trigger pulses in the form of a bar varying in length. The length of the bar corresponds to the value of the trigger input voltage. Using the 8 small rotary encoders, this analog input voltage can be assigned eight digital limit values which define the shape of the characteristic curve between beat strength and audible volume.

Note: On some MIDI keyboards (e.g. Yamaha DX7), the 128 dynamic stages defined in the MIDI standard are not used but instead, for example, only 109 (6DH) dynamic stages are output. This means that it is not possible to reach the maximum trigger level in the ADD-one with all equipment. In this case, the user must program appropriately corrected tracking outputs. This is not a fault of the ADD-one but rather a peculiarity on the part of other manufacturers in the way they use the possibilities offered by MIDI. Refer also to previous section (5.2.8).

CODE press ---> CODE page 2.1

The display will show for example:

```
AUDIO TRIGGER MODE:          AUDIO TRIGGER
         OFF                        PAGE 1
```

This page is used to switch the AUDIO TRIGGER mode on or off. In the ON position, the "»" and "«" keys can be used to access the next two pages "threshold" and "mask time". In the OFF position, these two pages are not accessible.

» press ---> CODE page 2.2

The display will show for example:

```
 1   2   3   4   5   6   7   8    TRIGGER
000 000 000 000 000 000 000 000 THRESHLD
```

On this page, the audio trigger threshold is set for each trigger input. The trigger level can be adjusted from 0 to 255. To obtain optimum settings, the trigger sensitivity controls located on the front of the unit may also be used.

>>

press ---> CODE page 2.3
(twice in all)

The display will show for example:

```
 1   2   3   4   5   6   7   8    TRIGGER
040 040 040 040 040 040 040 040 MASKTIME
```

On this page, the so-called mask time is set for each trigger input. This is the time during which new trigger pulses are ignored after a trigger has been released. The values may be adjusted from 0 to 255. The exact mask time is calculated as follows : value displayed x 1.4 ms.

As far as MIDI is concerned, both values are "global parameters" and together are made up of 17 bytes (8 threshold, 8 mask time and 1 ON/OFF). Using MIDI page 5, these parameters can be read out and loaded onto cassette.

CODE

press ---> CODE page 3
(three times in all)

The display will show for example:

```
RESET SELECTED CHANNEL TO DEFAULT VALUES
CHANNEL 1:          ARE YOU SURE?   "YES"
```

This possibility enables all parameters of an individual channel to be reset within a program to the values stored internally. This is particularly practical after experimenting with large numbers of parameters as it saves the user resetting each one individually to its default setting. Rotary encoder 3 can be used to set the appropriate channel and the command is executed with "STORE YES".

CODE

press ---> CODE page 4
(four times in all)

Information will appear on the display relating to the software version of the ADD-one and the cassette data format:

```
ADD-One SOFTWARE VERSION NUMBER 1.00
CASSETTE DATA VERSION NUMBER 0.10
```

Cassette data formats above the software version displayed cannot be loaded error-free!

5.2.10 Other Characteristics and Messages

a) When the ADD-one is switched on, the unit will go to the program number last selected before it was switched off. This also applies to all edits.

b) If the HELP key is held down while the ADD-one is being switched on, all parameters will be reset to their internally stored defaults. This is particularly practical after experimenting with large numbers of parameters as it saves the user resetting each one individually to its default setting.

c) If it was not possible to read the software properly while the ADD-one was being switched on, the following error message will appear on the display:

```
SOUNDS CANNOT BE READ PROPERLY. CHECK
SOUND EPROMS. DATA = AA BB CC DD EE FF
```

Here, letters A to F represent the first 6 bytes of the sound memory as they were read from the unit.

d) If the trigger circuit board has come unplugged (e.g. circuit board plugs loose) or the ADC (analog/digital converter) is not working properly, the following error message will appear on the display:

```
TRIGGER INPUT CIRCUITRY NOT FUNCTIONING
 CHECK POWER AND ADC ON TRIGGER BOARD
```

The unit now continues to function normally and this message only appears once after which all other pages are accessible again.

6. Practical Examples of Programming

This section contains a number of tips and tricks for you to try out in order to give you a better understanding of some of the function capabilities of the ADD-one listed earlier in this manual.

6.1 Basic Status of a Drumset

To begin with, let us program a drumset starting with the unit in its basic setting. The unit must be switched on holding down the HELP key and program 000 selected. All parameters are then returned to their basic settings or default values, e.g. VOLUME to 99.

Now press the "ROUT" key. This is an extremely simple way of selecting a normal drumset - for example, a bass drum is assigned to channel 1, a snare to channel 2, cymbal to channel 3, HiTom to channels 4 and 5, LoTom to channels 6 and 7 and finally an effect to channel 8. Now go to the next page by pressing the "»" key and select the desired instrument and instrument number (e.g. the 1st sound sample for all instruments).

Toms 4 and 5 or 6 and 7 are at this stage still identical and must be differently pitched. This is done by pressing the "PARAM" key and searching for the pitch page using keys ""»"" or "«". Now it is possible to create a tom line to suit your individual taste from channel 4 to 7 using positive or negative pitch values.

Using parameter DURATION it is now additionally possible to vary the length of the sound sample, i.e. cutting back the snare on channel 2, for instance.

A basic drumset has now been selected for program 000.

6.2 Pitch Effects

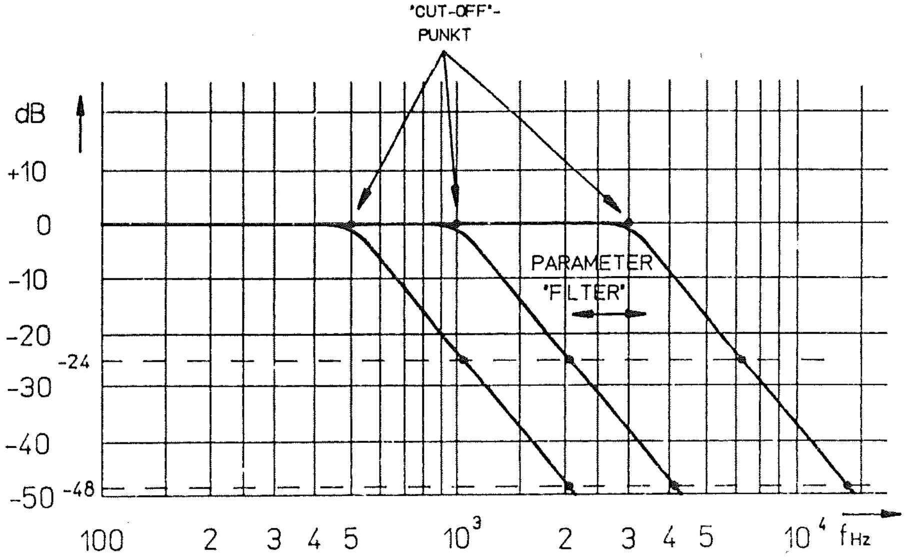
Pitch effects, i.e. automatic pitch bends can be created in the ADD-one using four different function groups. These are: envelope generator 1 (EG1), envelope generator 2 (EG2), low frequency oscillator (LFO) and controller input 1.

Dynamic pitch bending can be created using envelope generator 1 if it is programmed to influence the parameter PITCH. "Dynamic" means that the strength of the beat can cause the pitch of the instrument concerned to slide up or down and, after decaying, return to its original value. Here, negative values cause "bending up (buuiiim)", positive values "bending down (biiiuuum)". Taking the example of the tom channels, this is done by searching for the PCH BEND display on the PARAMETER page with keys "»" or "«" and incrementing to +70. To improve audibility, the next page, "BEND DCY", should be selected and the value 00 (shortest decay time) increased to higher values, i.e longer decay time. You should also bear in mind that the sound sample must be of sufficiently long duration, i.e. if necessary, slightly increase the parameter DURATION. Try also using negative values for the parameter "PITCH BEND" which will reverse direction of bend giving a "kettle drum" effect.

This "pitch bending" capability can also be controlled by envelope generator 2, which however works "statically", i.e. not dynamically with the beat. As soon as a specific trigger threshold value is exceeded, the EG2 will start to run and decay according to its setting. A similar principle applies to control by the LFO (see Section 6.4 and 6.5).

6.3 Possible Applications of the Filter Functions

The ADD-one is provided with a programmable digitally controlled filter for each of the eight channels. These are low-pass filters with sharp edge steepness. Low-pass means that virtually all tones are let through below the cut-off frequency whereas sounds above this threshold are dropped 24 dB/octave. The frequency response has more or less the following appearance:



The frequency response can be reduced (-) or increased (+) using the parameter FILTER. The value "00" has been selected for various samples, but always to ensure that the instrument sounds its "most natural". It may also be the case that for the value "00" the filter will be at the upper end of the bandwidth of the sample (≙ 1/2 x sampling frequency). Shifting the cut-off point upwards, therefore, will not increase the pitch of the sound. During operation therefore, the user may be experience that by increasing the filter cut-off frequency, no audible difference will be produced above the value +15. This is no fault of the unit but is inherent in the nature of the matter.

You will soon gain an impression of the acoustic effect of the filter by striking a tom aggressively which will pull the filter back: the beat will sound dampened.

With parameter FILTER BEND, the cut-off frequency of the filter can now be shifted up or down dynamically in relation to the strength of the beat. Select a high TOM and set the FILTER to -74, FILTER BEND to +99 and BEND DECAY to 64.

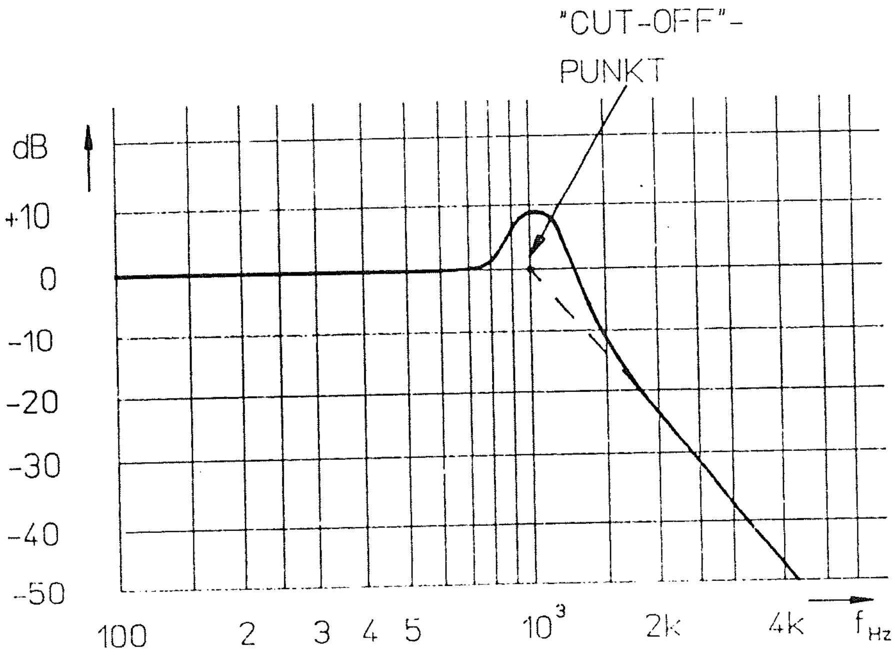
Now tap the pad lightly and you will hear a soft, extremely dampened sound. As the strength of the beat increases, the attack will become harder and sharper since the cut-off point of the filter is being pushed up.

This function can also be reversed, i.e. the sound becomes increasingly dull the harder the pad it hit.:

FILTER to +45, FIL BEND to -76 and BEND DEC to 80.

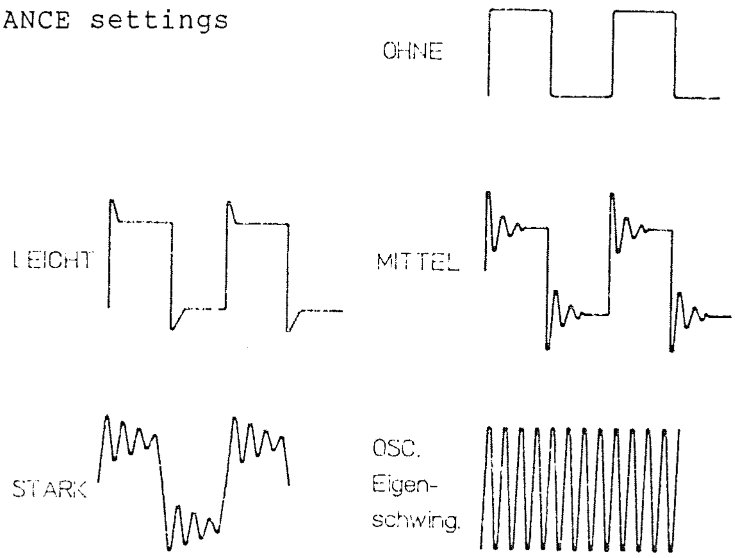
As already mentioned for the parameter PITCH, filter bending can also be switched from the dynamic mode (via envelope generator 1) to the static mode controlled by the decay of envelope generator 2. For further details, refer to the section "Working with Envelope Generator 2".

The basic parameter FILTER is in fact closely linked to the parameter FILTER RESONANCE which you will find on the next PARAMETER page. This parameter is addressed by pressing the key ADD PARAM and the "≫" key five times until the "RESNANCE" appears on the display. Here, parts of the output signal are routed back to the "filter input" by internal feedback thus generating resonance step-up at the cut-off point of the filter:



This has the following effect on oscillation:

Mode of oscillation for various
filter RESONANCE settings



Using the parameter FILTER RESONANCE, the beat noise can be varied up to the point at which a whistling tone is produced. To test this out, start playing, for example, pad 2 and set the filter as follows:

FILTER to 00, FILTER BEND to -72 and FILTER RES. to 55.

As the strength of the beat increases, you will clearly hear the somewhat exaggerated whistling sound produced by the beat.

To try out RESONANCE BEND, proceed from the following basic setting for pad 2:

FILTER to -20, BEND DECAY to 00 and RESONANCE to 65.

Now turn the resonance bend towards +99: initially you will not be able to perceive any change as the bend decay rate still has to be changed (it is still 00, i.e. in this case "inaudibly fast").

This change is easily made by going to the "vertical mode" and pressing "CHAN". Use "»" to select channel 2 (pad 2) and take a look at all the parameters on the first page for the channel we are currently dealing with. Now slowly turn the bend decay control (fifth rotary encoder from the left) towards 80 and you will hear the desired effect.

To compare the sound you had before, press the COMPARE key while striking pad 2. Now set filter bend to -80 and you will get a real "space invaders" sound.

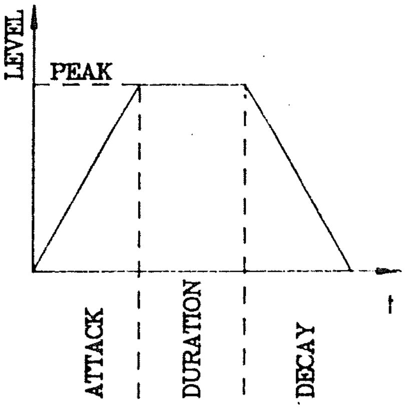
6.4 Working with Envelope Generator 2's

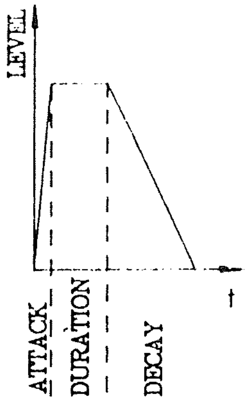
Parameter page 3 (ADD PARAM key pressed twice) contains the envelope generator 2's with their 3 parameters and the the effect they have on various unit parameters. These eight programmable envelope generators are able to affect four parameters - PITCH, FILTER FREQUENCY, FILTER RESONANCE and PANORAMA. However, before they can be used, they must be prepared, i.e. programmed.

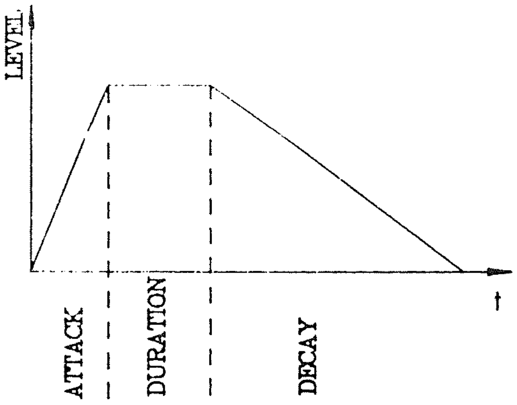
Three time ranges of the EG 2's can be adjusted, these are rise time (ATTACK), dwell duration (DURATION) and decay time (DECAY).

EG 2 ATTACK	determines the steepness of the rise to the maximum level value. The higher the value set, the shallower the rise curve will be, i.e. the longer it will take to reach the peak value.
EG 2 DURATION	controls the dwell time once the peak value has been reached. A high numerical value means a long horizontal time curve.
EG 2 DECAY	determines the edge steepness of the decay from the peak value back to 0. The higher the value set, the shallower the decay curve will be, i.e. the longer it will take to reach the starting value 0.

Here are three graphs to demonstrate these relations:







The left-hand graph illustrates the principle parameter assignments, the middle graph shows an extremely rapid attack, short duration and a relatively steep decay whereas in the right-hand graph the function curve rises slowly during the attack phase, stays for a relatively long time at the peak level and then slowly decays again.

Now let us assign the EG 2 to the 4 unit parameters. Here it is best to select the "vertical display" mode again using the CHAN key, search for ENV2-PAGE 3 and step through to tom channel 4 with ">>". In this mode, the display shows all parameters of envelope generator 2 for channel 4.

Now edit channel 4 as follows:

ATTACK	DURATION	DECAY	PITCH	FILTER	RESONANCE	PAN
74	70	99	-68	00	00	00

Start playing channel 4 and you will hear that the pitch of the toms is pulled down within the duration of the sound. With positive pitch values you will hear the reverse pattern for the same time duration. You can also try out the effect produced by not allowing the strength of the beat affect the time duration prescribed by EG 2. As already mentioned above, we have here "static" triggering, i.e. as soon as the beat exceeds the response threshold for the EG 2, it will start to run.

To test out filter control from EG 2, the parameter PITCH must be reset to 00 and the filter value to, say, -90. Audibility of the filter effect is best demonstrated using as high a broadband signal as possible (here in particular a noise signal). For the following examples, therefore, select generator 8 (white noise) as your instrument.

Now, hit the pad of the channel concerned and you will hear the effect very clearly. As a further example, reset both parameters ATTACK and DURATION to 00 and on beating the pad you will only hear a click followed by a dull decay of the noise signal as after triggering the filter is immediately pulled down.

The function "EG 2 to resonance" can also be demonstrated using the same "noise" sound sample by selecting the following setting:

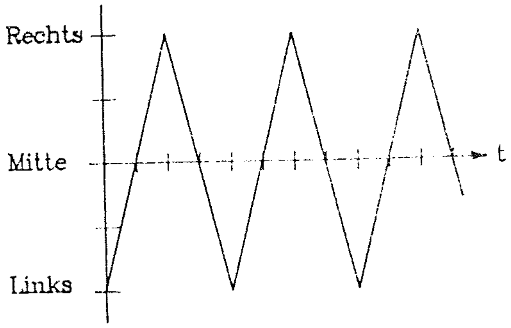
ATTACK	DURATION	DECAY	PITCH	FILTER	RESONANCE	PAN
74	70	99	00	00	80	00

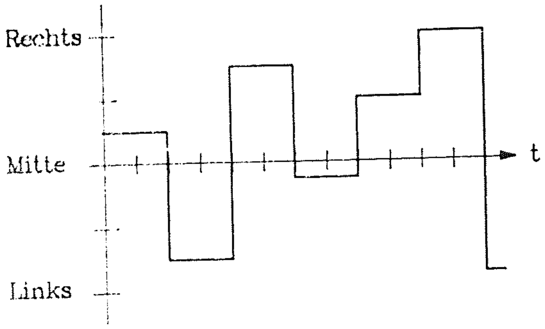
More or less the same applies to the stereo panorama effects with the dimensional layout of the sounding sample here being controlled by the curve function of EG 2 which causes the signal to wander through the dimension.

6.5 LFO and PANNING Effects

A similar control function to that in the section above can be achieved with the eight LFO's, particularly with parameter PAN. An LFO is a low-frequency generator capable of generating extremely slow oscillations (e.g. 1/2 to 10 oscillations per second) which as such are not audible as sounds. Instead these are used to control various parameters, such as pitch and the panorama. In the case of the ADD-one, it is possible to select 3 parameters of the LFO's themselves and the control effect can be defined for PITCH and PAN. The 3 parameters of the LFO's themselves are frequency, i.e. the rate of alternation per second, the shape of the alternation curve (TRI = triangle or RND = random function) and TRIGGER ON/OFF.

To facilitate understanding of these relations, here are two more graphs which are designed to demonstrate the effect of the LFO on the parameter PAN:





The left-hand graph shows the wave form TRI, i.e . triangle. To demonstrate this, go to LFO page 4 (press CHAN KEY once and ADD PARAM three times) in the EDIT CHANNEL mode and using ">>" step through to the channel to which you have assigned the noise generator. Now perform the following settings:

FRQ	WAV	PCH	PAN	TRG
20	TRI	00	99	OFF

After the beat, the sound sample will continually run back and forth between left and right. By decrementing or incrementing the numerical value in parameter FRG (frequency), the rate can be varied between extremely slow and flutter effects.

The right-hand graph shows the effect of the random generator. From practically all possible levels between the two extreme values (in this case "left" and "right") one random value is selected and held (sample and hold function). This random value then determines in our example the current spatial position of our sound. Try it out for yourself by simply setting the parameter WAV to RND.

If you want the LFO to affect the pitch of the sound sample, reset PAN to 00 and set PCH to positive or negative values. The higher the numerical value, the more intensive the effect will be.

Finally, a word on the parameter LFO-TRG: This is where you select whether the oscillator is to be restarted (ON) at the beginning of each trigger (beat) or not (OFF). In the OFF position, the LFO runs through "freely" and starts to run after the beat at the position reached.

The LFO's enable another particular effect. This is:

Flanging with two LFO's

This requires triggering from one pad the same sample in two channels with initially identical parameter settings and switching the ROTATE mode to OFF (also refer to next section). The pitch of the second sample is now slightly modulated by the LFO, e.g.:

FRG	WAV	PCH	PAN	TRG
20	TRI	16	80	ON

(the parameter PAN is not required for the actual flanging effect)

The higher the pitch of the sound sample, the better and clearer the flanging effect will be.

6.6 The INPUT Routing and the Rotate Mode

INPUT and SOUND routing are the real keys to some of the exceptional and so far unique possibilities offered by the ADD-one.

Firstly, let us assign to input 2 all instruments of the drumset we put together in Section 6, i.e. triggering via input 2 causes all channels (instruments) to sound uniformly, which at first sight may not appear to be of much use. However, many interesting effects are produced once the ROTATE mode is activated.

This necessitates pressing the ROUT key. EDIT ROUTING page 1.1 will appear on which all instrument categories can be rechecked and, if necessary, modified. After pressing the direction key "»", page 1.2 will appear indicating the sound sample numbers of the individual instrument categories. This page also provides the possibility of checking and, if necessary, modification. By actuating "»" again we move to page 1.3 where, by selecting INPUT 2 for all CHANNELS, we can realise the wish described above to simultaneously trigger all channels. The display should indicate:

```
01  02  03  04  05  06  07  08  CHANNELS
 2   2   2   2   2   2   2   2    INPUT
```

Before we try out the edit acoustically, first go to the next page with "»" where the parameter TRIGGER ROTATE is selected. This parameter should initially be set to OFF for all parameters.

Now hit pad 2 and the entire percussion array will suddenly sound.

Now let us activate the ROTATE mode, i.e. on the T.ROTATE page all 8 channels are switched to ON.

Once this has been done, all channels which have been assigned the same input (in our example all 8 to INPUT 2) are successively triggered, i.e. on the first trigger pulse the channel with the lowest number (in this case No. 1), then the channel with the next highest number (in this case No. 2), etc.

Now hit pad 2 a couple of times in succession or even play a roll (from very slow to very fast) and you will see the effect speaks for itself. An effect like this can be achieved neither with other electronic drums nor a natural percussion instrument, rhythm machine nor in any other way.

The ROTATE capability, however, is not limited to this effect alone, which, from the aspect of natural percussion instruments, may perhaps tend to appear rather more unnatural. The ROTATE mode can also contribute a lot to the naturalness of the sound pattern as demonstrated by our next example "SNARE".

Now set the percussion program in such a way that input 2 initially only triggers on channel 2; the snare sample selected is 005, duration is set to +24.

Now play a roll and pay attention to the decay of the individual beats. You will be able to hear clearly that the sample always restarts as soon as the stick hits the skin; only the last beat decays fully: the instrument loses in a certain respect its natural body.

Now set:

Channel 2 = INPUT 4, snare 001, ROTATE OFF
Channel 1 and 3 = INPUT 2, snare 001, ROTATE ON, DURATION +20

The same sample as before is now on pad 4 to enable us to compare it with snare pad 2 to which channel 1 and 3 have been routed. The REMOTE mode is ON.

Now play a roll alternately on pad 2 and, by way of comparison, on pad 4. You will soon be able to convince yourself that with the ROTATE MODE the roll decays much more natural than without. The more channels used, the more natural the sound will be, e.g. by including channel 4:

Channel 4: snare 001, INPUT 2, ROTATE ON, DURATION +20

Stereo effects can also be added through panorama:

PAN channel 1 = <-30
channel 3 = <-0->
channel 4 = 30->

The pitch of each of the three snares can now easily be slightly varied:

PITCH channel 1 = -1
channel 4 = +1

Other conceivable effects would be:

1st beat	= natural snare from the left	(PAN <-90)
2nd beat	= "shot" from the middle	(PAN <-0->)
3rd beat	= "Simmons" from the right	(PAN 90->)

These possibilities are of course not only applicable to the snare drum alone but are also in the same way suitable for all other instruments.

A further example would be a "swing" on a very long ride cymbal:

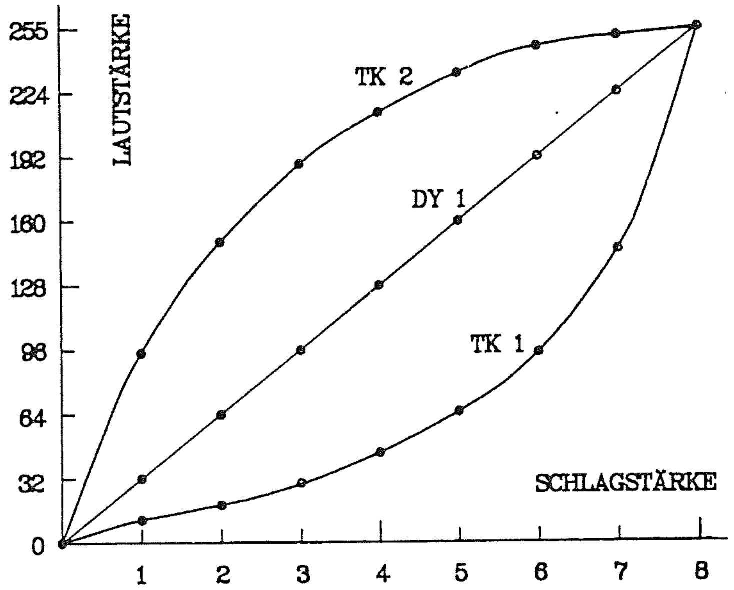
all 8 channels with ride cymbal in the ROTATE mode, e.g. on INPUT 8.

Although the "same" cymbal is continually rehit, each beat is virtually able to decay right to the end.

6.7 Programming the TRACKING Generators

Parameter DYNSCALE is used to define the shape of the curve which represents the conversion of beat strength into audible volume.

The ADD-one has 10 tracking generators each with 256 dynamic stages (000 to 255) which control this dynamic scaling. They are arranged in a grid of 8 corner points for the beat strength in comparison to the volume sounding. The graph below is designed to illustrate this relation:



This enables the user to match the unit extremely sensitively to his own style of playing, i.e. the "heavy" type can shift the dynamic jumps into the upper range of the beat strength while the "softy" can set the conversion in such a way that he only need tap the pads to create high volume.

In the graph above, compare: TK 1 = "heavy"
TK 2 = "softy"

The following curve shape possibilities are given:

DY1-3 = factory preset function curves (factory presets)
TK-0-9 = ten freely programmable curve shapes (TRACKING OUTPUT).

This capability is not only designed to match various styles of playing or using pads with non-linear characteristics, but also enables a host of other effects, such as "cross-fading", i.e. fading one sound into another in relation to the beat strength.

For programming, press the CODE key and the TRACKING page will appear. The bottom line indicates the 8 limit values for the beat strength axis. The upper line functions as a peak meter. Now hit any pad and compare the level deflection with your beat strength. With this aid, you can set the limit values with considerable accuracy to the beat thresholds.

By setting the rotary encoders accordingly, let us now generate a "cross-fade". The curve must be programmed as follows:

OUTPUT 0	045	085	125	165	200	225	255	000	this is now param TK0
OUTPUT 1	000	000	000	000	020	040	080	255	this is now param TK1

For CHANNEL 1 now select a natural bass drum and for CHANNEL 2, for example, a "Simmons bass drum" (instrument list is contained in the annex). Then press the function key ADD PARAM and the DYNAMIC SCALING page will appear. For CHANNEL 1 now select the previously programmed tracking scale TK0 and for CHANNEL 2, TK1 accordingly. Channels 1 and 2 must now be assigned to the trigger input 1 and we are ready for testing.

If you now slowly increase the beat intensity on pad 1, you will hear that as of "corner point" 5, the "Simmons" sound is gradually mixed in. At maximum beat strength, only the "Simmons" sound will be heard, and this at maximum volume - of course this depends on the setting of the volume control.

In contrast to this relatively hard cross-fading, it is of course also possible to create softer transitions by programming two reverse-image TRACKING OUTPUTS.

The possibilities are absolutely inexhaustible as not only is it possible to cross over from one sample to another but also, for example, with an "intermediate stage" from sample A to B and then to C.

Theoretically it is possible to cross-fade between a maximum of 8 samples, but this should not be taken too far. However, it would make sense, for example, to select a ride cymbal, for which the value 000 is entered at corner point 8, and a crash cymbal which is only triggered at beat strength 8.

6.8 Programming the Digital Delays and Creating Sequences

Delays, multiple repeats and even whole sequences can be generated with the 3 parameters TRIGGER DELAY, TRIGGER REPEAT and TRIGGER DECAY. You will find these parameters in the EDIT PARAMETER mode on pages 2.2 to 2.4 (ADD PARAM) and press "»").

The parameter TRIGGER DELAY defines the delay time between trigger pulse repeats, TRIGGER REPEAT defines the number of repeats and TRIGGER DECAY determines the rundown of the repeats.

This enables echoes to be generated: delay 015
repeat 08
decay -65

or doubling effects: delay 004
repeat 01
decay 00

If the repeats are to run through ad infinitum, select INF for trigger repeat. This could enable, for example, the HiHat to run through for the whole piece. If it is to be stopped again, you can use the following trick.

In the tracking output, program the value 000 for the HiHat for beat strength 1. Then simply press the stick against the pad (or lightly tap the rim). Although the HiHat will continue to run, it will do so at an inaudible dynamic stage.

In the case of sequences, the trigger rate is determined by trigger delay. The display reading x 10 corresponds to the time in milliseconds between individual trigger outputs. Various delays are now set, e.g. 0, 20, 30, 40. This enables rolls to be easily generated, for example, through- out the entire tom line. Clever programming of the delay times at the same time also allows a basic rhythm to be generated which automatically runs through during the whole piece and which then only needs the manual addition of "highlights".

7. EXTENSIONS AND ACCESSORIES

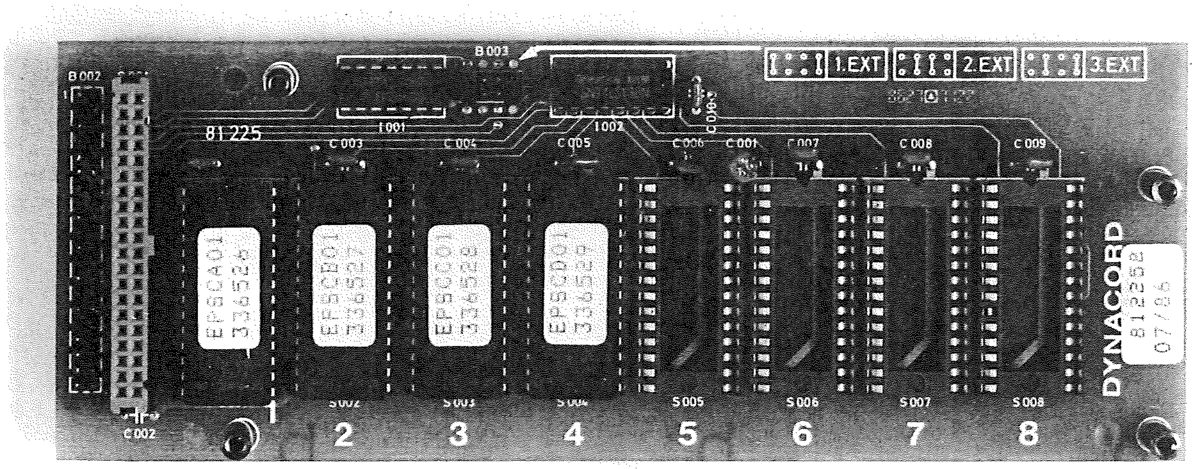
7.1 Installation Instructions for Retrofit Circuit Board PC-2 and Sound Extensions EPSC

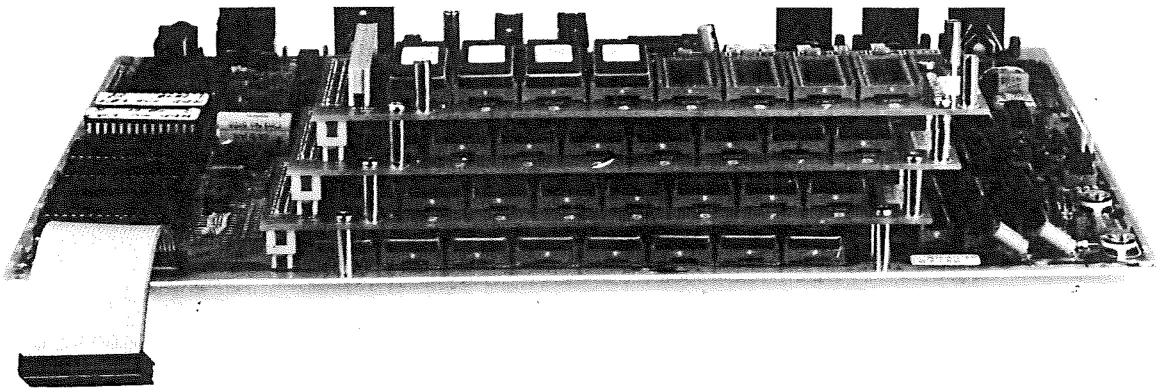
In addition to the EPSC sound extenders each comprising four 256-bit EPROMS, retrofit board PC-2 is required in order to extend the sound memory of the ADD-one.

It is imperative that the EPROM's are plugged in on a non-conductive working surface (e.g. rubber sponge).

CAUTION! Electrostatic charges may cause irreparable damage to the EPROM'S

Take the chip indexed A from the box and slightly bend the "legs" inwards on the working surface. Applying only slight pressure, push the chip into the socket. Check that all the "legs" have been inserted into the base and that none have been bent back or to the side. Proceed in the same way for the chips indexed B, C and D. It is important that you fill the plug-in locations consecutively, i.e. chip "A" in socket 1, chip "B" in socket 2, etc. If the first four sockets are already filled with an EPSC set, plug chip "A" into socket 5 and so on. Make sure that the notch on the top of the chip agrees with that in the socket.

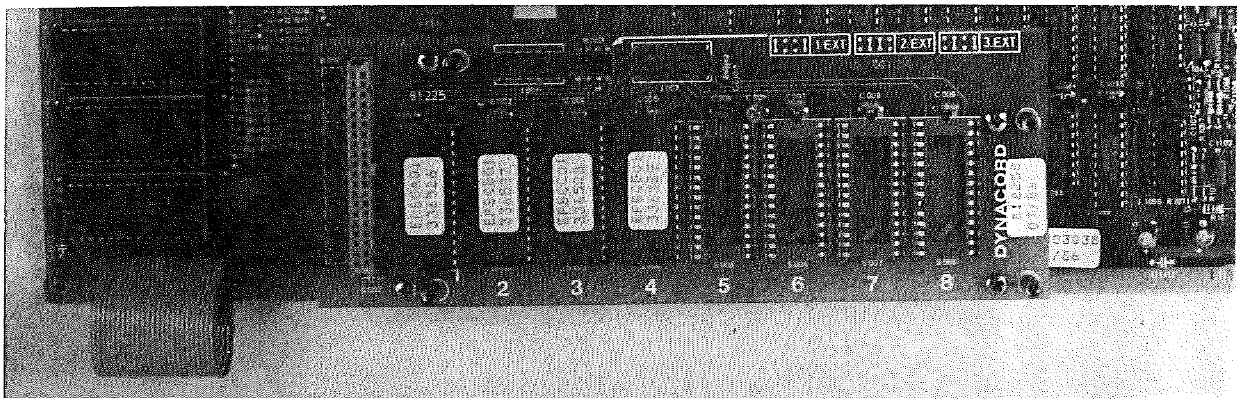




The cover plate must be unscrewed to install the retrofit circuit board in the ADD-one.

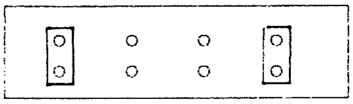
Disconnect mains plug before opening unit!

Now plug the retrofit circuit board into the base intended for this purpose which is located at the bottom left-hand corner of the motherboard (see photo).

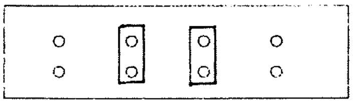


To prevent the circuit board becoming loose during transport, it must be secured with the four screws supplied. The ADD-one can drive a maximum of 3 retrofit circuit boards or 6 EPSC's. Each extension must be additionally coded via plug-in jumpers at the top edge of the circuit board:

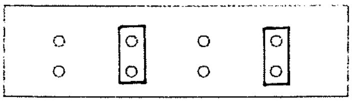
Arrangement of coding jumpers for the



first extension



second extension



third extension

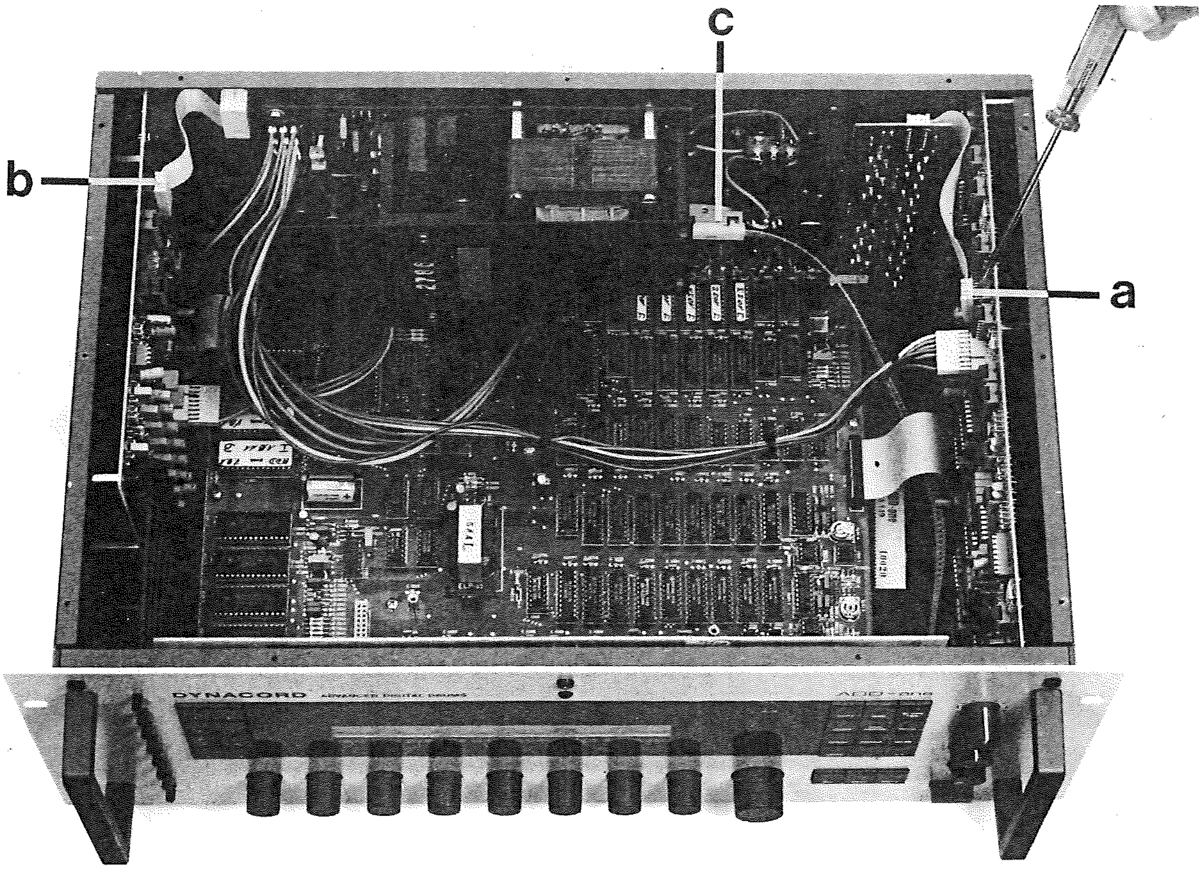
It is imperative you fill the sockets successively. Should you leave a gap when fitting the chips or make a mistake in coding the jumpers, the ADD-one will not be able to read out the downstream EPSC's. Recheck all installation steps and then screw the cover back on again.

Switch the ADD-one on and select a program with parameter setting 00. Press the "CHAN" and "rout" keys and select your new sound using encoders 1 and 2.

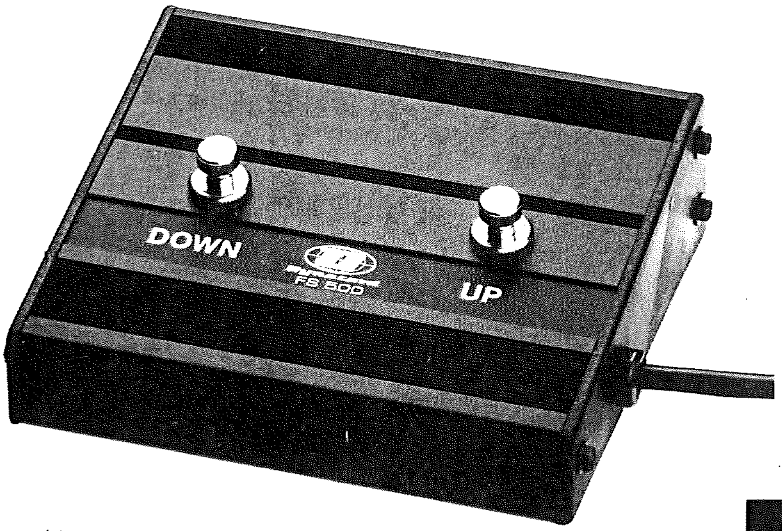
7.2 CHANGING THE MAINS VOLTAGE SETTING

To convert the ADD-one to operate on a different mains voltage, the unit must be opened. This entails unscrewing the cover plate. At the right (A) and left-hand (B) side of the unit you will see two ribbon cables which are connected to the multitrigger jack and the output jack board. Carefully undo their plug connectors with a small screwdriver. Then detach the switch Bowden cable (C) from the power pack by lifting the toothing of the white plastic section. Now the rear panel can be unscrewed and swung back. The two plug-in jumpers and the fuses are now easily accessible. Now select the appropriate mains voltage and exchange the fuse in accordance with the following table:

AC - INPUT	CONNECTION	FUSE
200V - 240V	⊓ ⊓ •	0,63 A SLOW
100V - 120V	• ⊓ ⊓	1,0 A SLOW

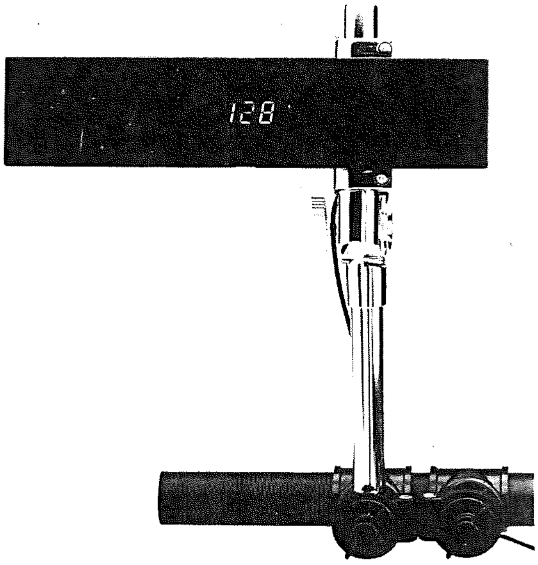


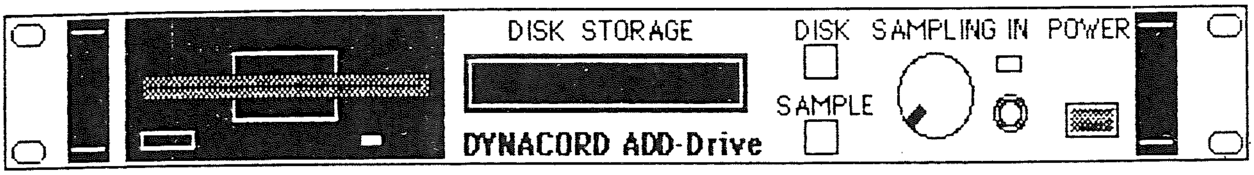
7.3 Accessories



FS 500

REMOTE PAD





ADD-DRIVE DISK-DRIVE WITH SAMPLER FOR ADDone

Once the 1987 exhibiton arrives, an interesting new expansion will be availabe for the ADDone:
The 3-1/2" disk drive **ADD-Drive** and a retrofit 6-Mbit RAM memory **ADD-RAM.**

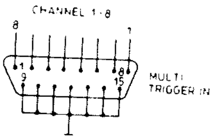
It will permit any desired samples to be loaded from the (inexpensive) floppy discs into the ADDone, where they can be edited. Furhtermore, any sound can be sampled from the user, processed with convenient ADD parameters and then stored onto disc. **One** disc holds the complete contents of the ADDone memory including the 128 drum set programs. Hence with a single disc you can load 128 different (additional) drum sets into the ADDone.

The potential for creativity is boundless!

8. ANNEX

8.1 TECHNICAL SPECIFICATIONS:

Inputs:	8 x Trigger In Multitrigger In Controller 1, 2	5 mVs - 10 Vs / 100 kohms 30 mVs - 10 Vs / 1 kohm 0 V - 5 V / 1 kohm
Outputs:	8 x Channel Out 3 x Master Out (Left/Right/Mono) 3 x Monitor Out (Left/Right/Mono)	1.5 V / 1 kohm 1.5 V / 1 kohm 1.5 V / 1 kohm
Headphones:	8 - 2000 ohms / 10 V at 600 ohms	
Cassette interface:	To cassette From cassette	1 Vs / 20 kohms 100 mVs / 500 kohms
Midi:	Midi IN-OUT-THRU Standard 1.0	
Power consumption:	50 watts max.	
Power supply:	220 V / 110 V 50/60 Hz	
Weight:	10.5 kg	
Dimensions (WxHxD):	483 x 177 x 350 mm	
Accessories:	Remote pad Foot switch FS 500 / Foot pedal FR 4 Extender board PC 2 Sound extender EPSC Disc drive / sampler Additional 6-Mbit DRAM memory	
Electronics:	8-pitch polyphonic 8 DCO's, max. sampling frequency 50 kHz 8 VCF's, 24 dB/oct. 20 Hz - 25 kHz 8 VCA's, control range 96 dB 8 VCPAN's 8 LFO's 16 envelope generators (EG's)	



8.2 MIDI SPECIFICATIONS

MIDI SEND

NOTE OFF- 8xH			
1000xxxx	0kkkkkkk		x = channel 0-15, k = note 0-127
	01000000	40H	preset decay rate
NOTE ON- 9xH			
1001xxxx	0kkkkkkk		x = channel 0-15, k = note 0-127
	0vvvvvvv		v = velocity 1-127
PROGRAM SELECT-	AxH		
1100xxxx	0nnnnnnn		n = program number 0-127
SYSTEM EXCLUSIVE-	F0H		
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000001	01H	Program data to follow
	0nnnnnnn		n = program number 0-127
	Data		704 bytes
	11110111	F7H	End of transmission
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000011	03H	Global data to follow
	00000000	00H	
	Data		214 bytes
	11110111	F7H	End of transmission
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000101	05H	Chain data to follow
	00000000	00H	
	Data		128 bytes
	11110111	F7H	End of transmission

MIDI RECEIVE RECOGNISED

NOTE ON- 9xH			Triggers drum, note off is ignored
1001xxxx	0kkkkkkk		x = channel 0-15, k = note 0-127
	0vvvvvvv		v = velocity 1-127, 0 is ignored
PROGRAM SELECT- AxH			
1100xxxx	0nnnnnnn		n = program number 0-127
CONTROLLERS- BxH			
1011xxxx	00000001	01H	x = channel 0-15, 1 = modulation wheel
	0vvvvvvv		v = unsigned value 0-127
PITCH BEND- ExH			
1110xxxx	0yyyyyyy		x = channel 0-15, y = LSB of pitch bend
	0zzzzzzz		z = MSB of pitch bend
SYSTEM EXCLUSIVE- F0H			
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000000	00H	Program data request
	0nnnnnnn		n = program number 0-127
	11110111	F7H	End of transmission
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000001	01H	Program data to follow
	0nnnnnnn		n = program number 0-127
	Data		704 bytes
	11110111	F7H	End of transmission
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000010	02H	Global data request
	00000000	00H	Must always be 0
	11110111	F7H	End of transmission
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000011	03H	Global data request
	00000000	00H	Must always be 0
	Data		214 bytes
	11110111	F7H	End of transmission
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000100	04H	Chain data request
	00000000	00H	Must always be 0
	11110111	F7H	End of transmission
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000101	05H	Chain data request
	00000000	00H	Must always be 0
	Data		128 bytes
	11110111	F7H	End of transmission
11110000	00110000	30H	Dynacord I.D. number
	00000000	00H	ADD-one I.D. number
	00000110	06H	All Data data request (all parameter data, global data and chain data)
	00000000	00H	Must always be 0
	11110111	F7H	End of transmission

8.3 ADD-ONE PROGRAM DATA FORMAT

A program is sent via MIDI as a block of 704 bytes. Two bytes represent one parameter of a voice. There are 44 parameters per voice and 8 voices per program (2*44*8=704). Voice 1 is sent first, followed by 2 and by 3 etc. Although most parameters use less than 8 bits, all parameters are nevertheless sent as binary numbers 8 bits wide. It is recommended that all 8 bits of each parameter, just as the undefined parameters (No. 24, 30, 31 and 32) are stored with a program as these values may at some time be used in a future software version. The first byte of each parameter contains 7 LSB's (least significant bits) of the parameter and the second byte contains the MSB's (most significant bits) of the parameter in bit 0. Bits 1-6 of the second byte of each parameter are not used. If the pitch of a voice, for instance, is set to -5, the data will have the following appearance:

01111011	First byte contains bits 0-6
00000001	Second byte contains bits 7 in bit 0

This is the same as 11111011 which represents the two's complement of -5. The parameters MUST remain within the given range otherwise the data will be incorrectly sequenced. The values of some parameters change in steps greater than 1 if they are incremented with the rotary encoders on the front panel of the ADD-one. Internally, the ADD-one only actually increments or decrements by 1 but the display automatically multiplies the values by a constant to indicate the appropriate value. The reason for this method of approach is that most parameters should have the value 99 as their maximum, but without wasting memory space and in order to have all parameters with the same resolution. Should a value be greater than 99, the display will still only show 99. The volume control, for example, has a range from 0-50 and the value displayed is multiplied by 2. If the encoder is turned up, the display will change in steps of two, i.e. 0, 2, 4, 6, 8, etc. although the parameter value is only incremented each time in steps of 1. If the value reaches 50, the display will show 99 which indicates that the maximum value has been reached although 50*2=100. The constant which each parameter is multiplied by is contained in the table under parameter STEP. Some parameters are not indicated as numbers, e.g. the LFO wave form, selection of DYNAMIC SCALING, etc. The display reading is contained under NOTES. The parameters SOUNDNAME and SOUNDNUMBER are distinct from the remainder as they contain values which are geared to the samples in the ADD-one memory. If a sound name does not exist in the sample memory, the ADD-one will allocate the first available sample to this voice. If a sound name does exist but no associated sound number, the ADD-one will allocate the sample with the lowest number to this sound name.

PROGRAM DATA FORMAT

	NAME	BITS	MIN	MAX	STEP	REMARKS
1.	VOLUME	6	0	50	2	
2.	PAN	5	-10	10	10	- = left, + = right
3.	PITCH	8	-99	99	1	
4.	PITCH BEND	7	-50	50	2	
5.	BEND DECAY	6	0	50	2	
6.	FILTER	8	-99	99	1	
7.	FILTER BEND	7	-50	50	2	
8.	DURATION	7	-50	50	2	
9.	DYN SCALE	2	0	12	1	DY1, DY2, DY3, TK0 - TK9
10.	DELAY TIME	7	0	127	1	
11.	"REPEATS"	8	-99	99	1	+/-99=const.repeats (disp.INF)
12.	TRIG DECAY	6	-50	0	2	
13.	RESONANCE	5	0	20	5	20=oscillation (display OSC)
14.	RES BEND	7	-50	50	2	
15.	CNTRL 1	7	-50	50	2	
16.	CNTRL 2	7	-50	50	2	
17.	ENV 2 ATK	6	0	50	2	
18.	ENV 2 DUR	6	0	50	2	
19.	ENV 2 DCY	6	0	50	2	
20.	ENV2- PITCH	7	-50	50	2	
21.	ENV2- FILT	7	-50	50	2	
22.	ENV2- RES	7	-50	50	2	
23.	ENV2- PAN	7	-50	50	2	
24.	blank	0	0	0	0	
25.	LFO SPEED	6	0	50	2	
26.	LFO WAVE	1	0	1	1	0=triangle(TRI), 1=random(RND)
27.	LFO- PITCH	7	-50	50	2	
28.	LFO- PAN	7	-50	50	2	
29.	LFO TRIG	1	0	1	1	0 = OFF, 1 = ON
30.	blank	0	0	0	0	
31.	blank	0	0	0	0	
32.	blank	0	0	0	0	
33.	NAME MSB	7	0	127	1	These 3 bytes are ASCII values of the sample name. The sample must exist in the memory of the ADD-one.
34.	NAME MID	7	0	127	1	
35.	NAME LSB	7	0	127	1	
36.	SOUND *	8	0	255	1	Only sample numbers existing
37.	TRIGGER	3	0	7	1	Display 1 to 8
38.	ROTATE	1	0	1	1	0 = OFF, 1 = ON
39.	MIDI CHAN	4	1	16	1	
40.	UPPER LIMIT	7	0	127	1	
41.	LOWER LIMIT	7	0	127	1	
42.	MIDI PITCH	1	0	1	1	0 = OFF, 1 = ON
43.	PITCH WHEEL	4	0	11	1	0=OFF,1=VOL,2=PAN,3=PIT,4=BDE, 5=FIL,6=DUR,7=RES,8=2AT,9=2DU, 10=2DE,11=LFO
44.	MOD WHEEL	4	0	11	1	

ADD-ONE GLOBAL DATA FORMAT

The global data of the ADD-one comprise 10 tracking generators and 17 bytes for the audio trigger data (8 thresholds, 8 mask times and 1 audio trigger on/off). The 10 tracking generators are sent via MIDI as a block of 180 bytes. Two bytes represent a point of a tracking generator. In all there are 9 points per tracking generator; for a total of 10 tracking generator this makes: 2*9*10=180. Tracking 0 is sent first, followed by 1 and then by 2, etc. All points are sent as 8-bit values (0-255). As in the case of the program data format, the first byte of each point contains the 7 LSB's (least significant bit) of the point and the second byte contains the MSB's (most significant bit) of the point in bit 0. Bits 1-6 of the second byte of each point are not used. The first point of each tracking generator is not adjustable from the front panel of the ADD-one and is always set to 0. Although the tracking generator can also function with the first point when it is not 0, it will always be reset to 0 when the unit is switched on. Audio trigger information is sent immediately after the tracking generators. These 17 bytes are 8-bit values (0-255) and are sent, as for the tracking generator, with 7 LSB's in the first byte and the MSB in bit 0 of the second byte (total of 34 bytes). Data is sent in the order threshold trigger 1-8, followed by mask time trigger 1 to 8, followed by audio trigger ON/OFF. Although the last parameter is only a switching function, it is sent as a 2-byte piece of information in order not to break the pattern of the rest of the format. Zero means the trigger function is OFF, non-zero means audio trigger is ON.

ADD-ONE CHAIN DATA FORMAT

The chain information is sent via MIDI as a block of 128 bytes. Each byte represents one step in the chain. As the value of each step can range between 0 and 127, each step is sent via MIDI as 7-bit data. Steps are sent sequentially from 0 to 127.

ADDone - Samples (ab 1. Serie)

Derzeit sind folgende Sounds-Samples für den ADDone verfügbar:

1. Grundausstattung

CYM 001 CLSD.HIHAT
CYM 002 ACC. HIHAT
CYM 003 OPEN HIHAT
CYM 004 CLSD.M-HH (M = Multisample)

GEN 001 SINE WAVE
GEN 002 RECTANGLE
GEN 003 RECT.HIGH
GEN 004 PULSE 25
GEN 005 PULSE 10
GEN 006 PULSE SOFT
GEN 007 CLICK
GEN 008 WHTE NOISE
GEN 009 DARK NOISE

BDR 001 CC BASS 22
BDR 005 CC M-BASS (M = Multisample)
BDR 007 PC BASS 20
BDR 009 PC M-BASS (M = Multisample)
BDR 011 SYN BASS 1
BDR 013 SYN BASS 2

SNA 001 CC SNARE 10"
SNA 002 CC RIMSHOT
SNA 003 CC SIDEST.
SNA 004 CC BRUSH
SNA 005 CC M-SNARE (M = Multisample)
SNA 007 PC SNARE 8"
SNA 008 PC RIMSHOT
SNA 009 PC M-SNARE (M = Multisample)
SNA 011 SYN SNARE 1
SNA 014 SYN SNARE 2

HIT 001 CC TOM 12
HIT 002 CC TOM 13
HIT 005 CC M-TOM 12 (M = Multisample)
HIT 006 CC M-TOM 13
HIT 007 PC TOM 12
HIT 008 PC TOM 13
HIT 009 PC M-TOM 12 (M = Multisample)
HIT 010 PC M-TOM 13
HIT 011 SYN TOM 1 A
HIT 012 SYN TOM 1 B
HIT 013 SYN TOM 2 A
HIT 014 SYN TOM 2 B

LOT 001 CC TOM 15
LOT 002 CC TOM 18
LOT 005 CC M-TOM 15
LOT 006 CC M-TOM 18 (M = Multisample)
LOT 007 PC TOM 15
LOT 008 PC TOM 16
LOT 009 PC M-TOM 15
LOT 010 OC M-TOM 16 (M = Multisample)
LOT 011 SYN TOM 1 C
LOT 013 SYN TOM 2 C

PER 001 CONGA BR. 1
PER 002 CONGA BR. 2
PER 003 BONGO BR. 1
PER 004 BONGO BR. 2
PER 005 TIMBALES 12"
PER 006 TIMBALES 14"
PER 007 COWBELL
PER 008 HANDCLAP

EFF 001 SHOT
EFF 002 MACHINE

ADD-ONE PROGRAM-NR.

	PARAMETER	CH.1	CH.2	CH.3	CH.4	CH.5	CH.6	CH.7	CH.8
ROUTING	INSTRUM								
	SOUND-NR								
	INPUT								
	T.ROTATE								
PAGE 1	VOLUME								
	PANNING								
	PITCH								
	PCH BEND								
	BEND DCY								
	FILTER								
	FIL BEND								
	DURATION								
PAGE 2	DYNSCALE								
	TR.DELAY								
	T.REPEAT								
	TR.DECAY								
	RESNANCE								
	RES BEND								
	CONTRL 1								
	CONTRL 2								
EG2 PAGE 3	EG2 ATCK								
	EG2 DURA								
	EG2 DECY								
	EG2➤PICH								
	EG2➤FILT								
	EG2➤RES								
	EG2➤PAN								
LFO PAGE 4	LFO FREQ								
	LFO WAVE								
	LFO➤PICH								
	LFO➤PAN								
	LFO TRIG								

	MIDI	TR.1	TR.2	TR.3	TR.4	TR.5	TR.6	TR.7	TR.8
PAGE 1	MIDI CH.								
	LO LIMIT								
	HI LIMIT								
PAGE 2	MIDI PCH								
	PITCH WH								
	MOD WHEL								
		MIDI MOD				BASIC CH			
	BASIC SET								

TRACKINGS	1	2	3	4	5	6	7	8
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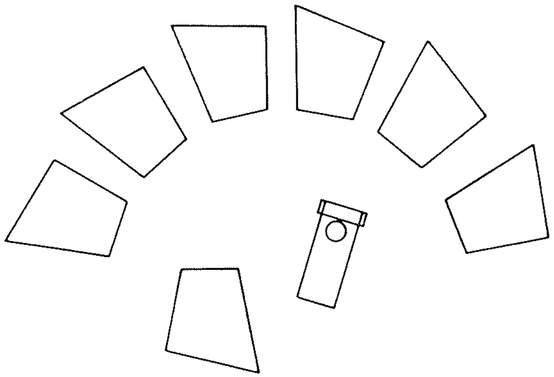

ADD-ONE PROGRAM-NR.

	PARAMETER	CH.1	CH.2	CH.3	CH.4	CH.5	CH.6	CH.7	CH.8
ROUTING	INSTRUM								
	SOUND-NR								
	INPUT								
	T.ROTATE								
PAGE 1	VOLUME								
	PANNING								
	PITCH								
	PCH BEND								
	BEND DCY								
	FILTER								
	FIL BEND								
	DURATION								
PAGE 2	DYNSCALE								
	TR. DELAY								
	T. REPEAT								
	TR. DECAY								
	RESNANCE								
	RES BEND								
	CONTRL 1								
	CONTRL 2								
EG 2	EG2 ATCK								
	EG2 DURA								
	EG2 DECY								
PAGE 3	EG2➤PICH								
	EG2➤FILT								
	EG2➤RES								
	EG2➤PAN								
LFO PAGE 4	LFO FREQ								
	LFO WAVE								
	LFO➤PICH								
	LFO➤PAN								
	LFO TRIG								

	MIDI	TR.1	TR.2	TR.3	TR.4	TR.5	TR.6	TR.7	TR.8
PAGE 1	MIDI CH.								
	LO LIMIT								
	HI LIMIT								
PAGE 2	MIDI PCH								
	PITCH WH								
	MOD WHEL								
		MIDI MOD				BASIC CH			
	BASIC SET								

TRACKINGS	1	2	3	4	5	6	7	8
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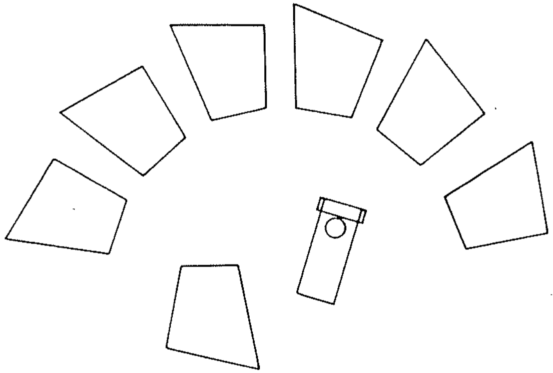

ADD-ONE PROGRAM-NR.

	PARAMETER	CH.1	CH.2	CH.3	CH.4	CH.5	CH.6	CH.7	CH.8
ROUTING	INSTRUM								
	SOUND-NR								
	INPUT								
	T.ROTATE								
PAGE 1	VOLUME								
	PANNING								
	PITCH								
	PCH BEND								
	BEND DCY								
	FILTER								
	FIL BEND								
	DURATION								
PAGE 2	DYNSCALE								
	TR. DELAY								
	T. REPEAT								
	TR. DECAY								
	RESNANCE								
	RES BEND								
	CONTRL 1								
	CONTRL 2								
EG 2 PAGE 3	EG2 ATCK								
	EG2 DURA								
	EG2 DECY								
	EG2 ➤ PICH								
	EG2 ➤ FILT								
	EG2 ➤ RES								
	EG2 ➤ PAN								
LFO PAGE 4	LFO FREQ								
	LFO WAVE								
	LFO ➤ PICH								
	LFO ➤ PAN								
	LFO TRIG								

	MIDI	TR.1	TR.2	TR.3	TR.4	TR.5	TR.6	TR.7	TR.8
PAGE 1	MIDI CH.								
	LO LIMIT								
	HI LIMIT								
PAGE 2	MIDI PCH								
	PITCH WH								
	MOD WHEL								
		MIDI MOD				BASIC CH			
	BASIC SET								

TRACKINGS	1	2	3	4	5	6	7	8
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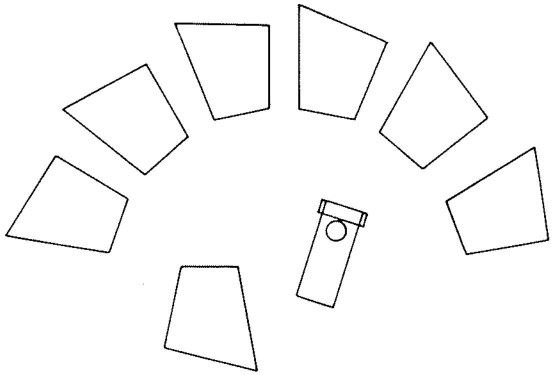

ADD-ONE PROGRAM-NR.

	PARAMETER	CH.1	CH.2	CH.3	CH.4	CH.5	CH.6	CH.7	CH.8
ROUTING	INSTRUM								
	SOUND-NR								
	INPUT								
	T.ROTATE								
PAGE 1	VOLUME								
	PANNING								
	PITCH								
	PCH BEND								
	BEND DCY								
	FILTER								
	FIL BEND								
	DURATION								
PAGE 2	DYNSCALE								
	TR. DELAY								
	T. REPEAT								
	TR. DECAY								
	RESNANCE								
	RES BEND								
	CONTRL 1								
	CONTRL 2								
EG2 PAGE 3	EG2 ATCK								
	EG2 DURA								
	EG2 DECY								
	EG2➤PICH								
	EG2➤FILT								
	EG2➤RES								
	EG2➤PAN								
LFO PAGE 4	LFO FREQ								
	LFO WAVE								
	LFO➤PICH								
	LFO➤PAN								
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	MIDI	TR.1	TR.2	TR.3	TR.4	TR.5	TR.6	TR.7	TR.8
PAGE 1	MIDI CH.								
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PAGE 2	MIDI PCH								
	PITCH WH								
	MOD WHEL								
		MIDI MOD				BASIC CH			
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TRACKINGS	1	2	3	4	5	6	7	8
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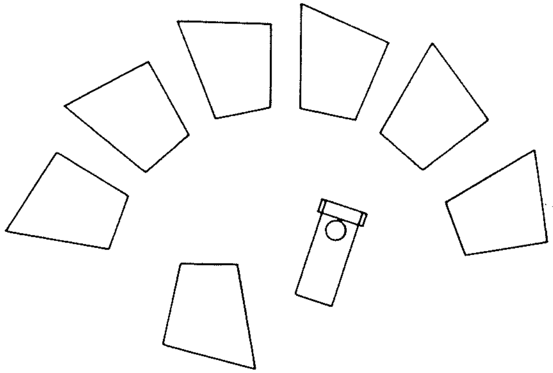

ADD-ONE PROGRAM-NR.

	PARAMETER	CH.1	CH.2	CH.3	CH.4	CH.5	CH.6	CH.7	CH.8
ROUTING	INSTRUM								
	SOUND-NR								
	INPUT								
	T. ROTATE								
PAGE 1	VOLUME								
	PANNING								
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	PCH BEND								
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	EG2 DECY								
PAGE 3	EG2 ➤ PICH								
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	EG2 ➤ RES								
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	PITCH WH								
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